

The Evolution of Professional Aviation Culture in Canada, 1939-1945

By

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By

Matthew Chapman

Supervisory Committee

Dr. David Zimmerman, Supervisor
(Department of History)

Dr. Penny Bryden, Departmental Member
(Department of History)

Supervisory Committee

Dr. David Zimmerman, Supervisor
(Department of History)

Dr. Penny Bryden, Departmental Member
(Department of History)

ABSTRACT

The rapid expansion of the postwar commercial aviation industry in Canada was made possible, in part, by the thousands of wartime pilots who filled the ranks of the nation's major airlines beginning in 1944. Through mentorship of subsequent generations of peacetime aviators, wartime pilots had lasting impacts on the Canadian commercial aviation industry during their time flying for companies such as Trans Canada Airlines (TCA).

Following an examination of the agreements made between the Royal Canadian Air Force and TCA between 1944 and 1945 for the transfer of pilots between the two organizations, this thesis tracks the development of the professional culture of wartime RCAF aviators through an analysis of their training and subsequent operational flying during the war. It concludes that while there were numerous benefits for commercial aviation in Canada through this process, there were, likewise, a series of negative repercussions for the safety of the Canadian aviation industry.

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LIST OF ABBREVIATIONS

BCATP	British Commonwealth Air Training plan
BOAC	British Overseas Airways Corporation
CAF	Canadian Air Force
CGTAS	Government of Canada Trans-Atlantic Service
CAL	Canadian Airlines
CPA	Canadian Pacific Airlines
CRM	Crew Resource Management
EFTS	Elementary Flight Training School
LMF	Lack of Moral Fibre
OTU	Operational Training Unit
PTSD	Post Traumatic Stress Disorder
RAF	Royal Air Force
RCAF	Royal Canadian Air Force
RFC	Royal Flying Corps
RNAS	Royal Naval Air Service
SFTS	Service Flight Training School
TCA	Trans Canada Airlines

Introduction and Historiography

The Second World War was a training ground for aircrew like no other in the history of aviation. In the aerodromes of the British Commonwealth Air Training Plan (BCATP) and the hostile and unforgiving skies of wartime Europe, North Africa, South Asia and the North Atlantic, tens of thousands of young men adapted to a type of flying that had previously only been attempted by a daring few. While Canadian wartime pilots were pitted against a highly proficient enemy in the air, they also faced the added danger of flying increasingly sophisticated, complex and relatively untested aircraft higher, faster, farther, longer, and in atmospheric conditions more extreme, than ever attempted before. Furthermore, the training that these young men received was itself in the throes of a painful evolutionary process which produced casualty statistics comparable to those of combat. Through their wartime experiences, Canadian aviators shaped, and in turn were shaped by, a professional culture defined by a set of practices, beliefs and traditions which proved critical in developing, both for the better and for the worse, the postwar Canadian civil aviation industry.

The definition of professional culture used here is the one provided by Robert Helmreich and Ashleigh Merritt in their 1998 book, *Culture at Work in Aviation and Medicine*.¹ It is the culture of a profession “manifested in its members by a sense of community and by bonds of a common identity.” Its norms and value are “exemplified by its senior members” and policed internally within a hierarchical system where

¹ Robert L. Helmreich and Ashleigh C. Merritt. *Culture at Work in Aviation and Medicine: National, Organizational and Professional Influences* (Burlington, VT: Ashgate, 1998) 30.

experience dictates social status.² Attitudes towards professionalism and safety in flight, training methods and standards, gender bias, reverence for authority and the practical experience of members are in large part shared within the profession and defined by its culture. With this definition in mind, the following seeks to answer the question of how the professional culture of the postwar commercial aviation industry was influenced by the wartime experiences of Canadian military aviators.

Royal Canadian Air Force (RCAF) pilots who transitioned into civil aviation after the war had navigated through the perils of wartime training and overcome some of the most improbable odds of survival of any branch of any service of the war.³ What was produced by war's end was not only a generation of young aviators with exceptional skills as pilots, but a professional culture where a reverence for those skills was enshrined within a complex matrix of resilient, male-centric cultural traditions. When one examines the historical origins of this professional culture, its resistance to change and adaptation in response to new concepts in aviation safety, which began to dramatically alter the aviation industry in the 1980s, becomes less perplexing.

To this end, the following begins by presenting a historical case study of the transition of wartime pilots to commercial aviation in Canada through the links and agreements made between the RCAF and what would become the largest airline in postwar Canada, Trans Canada Airlines (TCA). Having established that wartime aviators formed the core demographic of pilots who dominated Canada's national postwar airline, the focus then shifts to an examination of the wartime experiences of those pilots. As this thesis will show, the majority of wartime aviators who became TCA

² Ibid.

³ Specifically those aircrew who served with Bomber Command, the largest branch of the wartime RCAF.

pilots had flown heavy, multi-engine bombers and maritime patrol aircraft. As such, the focus on the wartime experiences of those pilots will take precedence here over an examination of other branches of the RCAF.

In analyzing the factors which shaped professional aviation culture during the Second World War, two readily definable phases of an aircrew's experience present themselves for study. The first, which will be examined in chapters two and three, is the period of training where pilots were introduced to the world of aviation. The magnitude of challenges that young RCAF aviators faced during this stage in their military careers remains largely overlooked in the historiography of Canadian wartime aviation. By examining the evolution of wartime pilot training, this thesis tracks the shifting perceptions of safety held both by those implementing the training as well as those being trained. Through an examination of the highly competitive and challenging processes involved in pilot training, it is possible to understand the origins of a complex matrix of fraternities in which inclusion and exclusion were determined by shared experiences and participation in institutional rites of passage. The second phase, which will be explored in chapter four, examines the operational experiences of aircrew where formal training ended and practical experience building in dynamic and radically more hostile environments began.

If scholarly works written on Canadian aviation history are few, those which offer insights into the development of professional aviation culture in Canada are fewer. Prominent among the works that do exist are the three volumes of the official history of the Royal Canadian Air Force which cover the span of military aviation in Canada from 1914 to 1945. Although focus is placed on the administrative and operational history of

the RCAF, each volume offers unique insights into the evolution of aviation culture which are applicable to the focus of this thesis. Volume I, *Canadian Airmen and the First World War* by S. F. Wise, discusses at length the complex political, constitutional, military and social contexts that shaped pilot-training policy and aviation culture in Canada during the First World War.⁴ The second, *The Creation of a National Air Force* by W.A.B. Douglas *et al.*, is perhaps the most illuminating of the three in exploring the cultural side of the evolution of Second World War aircrew training in Canada.⁵ Before offering a comprehensive discussion of the BCATP and home and maritime defence operations between 1939 and 1945, Douglas examines the relative stagnation of Canadian aviation infrastructure before 1939. As *The Creation of a National Air Force* explains, it was in part the unregulated and un-stimulated nature of depression area Canadian aviation which resulted in high levels of economic competition and cut-throat rivalries forming between operators.⁶ Partly as a result of this competition, flights were often taken without due regard for safety. This, Douglas argues, created a professional atmosphere in which pilots often pushed the limits of safety to ensure the economic survival of their companies. As a result, a culture of risk-taking and showboating pervaded the industry, a culture which, due in part to the public's acknowledgement of the risks of flying at the time, helped hinder the development of a safe and efficient passenger airline industry from taking root in Canada before 1936. This thesis expands on Douglas's examination of interwar aviation by contextualizing his findings specifically within a discussion of professional culture.

⁴ S.F Wise, *Canadian Airmen and the First World War: The Official History of the Royal Canadian Air Force Volume I* (Toronto: University of Toronto Press, 1980).

⁵ W.A.B. Douglas, *The Creation of a National Air Force: The Official History of the Royal Canadian Air Force Volume II* (Toronto: University of Toronto Press, 1986).

⁶ David Corbett, *Politics and the Airlines* (Toronto: University of Toronto Press, 1965) 160-161.

In a further analysis of the BCATP, *The Creation of a National Air Force* recognizes the fact that the stunted size of the RCAF at the outbreak of the Second World War hampered the safe logistical expansion of training that began in earnest in early 1940.⁷ The glorification of the 'dashing' First World War ace and the 'daring' bush pilot of the interwar period in the nation's collective psyche, images propagated by film, radio and print media of the 1920s and 1930s, likely led to excessive shows of bravado and risk-taking in the early days of the BCATP both from students and instructors alike. This, Douglas highlights, was a significant cause of the epidemic of unauthorized low flying accidents which plagued the BCATP during the first years of the war. What is most striking in Douglas's examination of the cultural side of wartime training comes with his contrasting the sense of adventure amongst the plan's first recruits, with that of rigid, exacting professionalism which developed as the war progressed.⁸ This thesis continues Douglas's examination of accidents attributed to unauthorized low flying while suggesting that such accidents were symptomatic of a then still developing professional culture.

The last of the three official history volumes of the RCAF, *The Crucible of War: 1939-1945* by Greenhouse *et al*, offers a comprehensive overview of Canada's involvement in the Allied bomber offensive and maritime patrol operations during the Second World War.⁹ Although the book's primary focus is on the administrative and operational history of Canada's participation in Fighter, Coastal and Bomber Commands, the contributions it makes in exploring the development of wartime aviation

⁷ Allan D. English, *The Cream of the Crop: Canadian Aircrew, 1939 – 1945* (Montreal: McGill University Press, 1996), 12.

⁸ Douglas, *The Creation of a National Air Force*, 284-285.

⁹ Brereton Greenhouse et al., *The Crucible of War 1939-1945: The Official History of the Royal Canadian Air Force Volume III* (Toronto: University of Toronto Press, 1994).

culture are, if only tacitly, numerous. Particularly valuable to informing this thesis is the attention Greenhouse pays to the daily challenges faced by Canadian aviators and the wealth of statistical information pertinent to assessing the psychological pressures placed on operational aircrew through casualty rates and crew survivability percentages.¹⁰ Yet one issue which *The Crucible of War* largely overlooks, or worse yet seems to dismiss, is the impact of psychological trauma on Canadian airmen and the effect this had on their ability to safely operate aircraft.¹¹ Here the relatively recent work of Allan D English in *The Cream of the Crop: Canadian Aircrew 1939-1945*,¹² and in his article, "Canadian Psychologists and the Aerodrome of Democracy,"¹³ offers a compelling counter-point to Greenhouse's assertion that "the number of airmen who became neuro-psychiatric casualties was infinitesimal."¹⁴ Perhaps most illuminating of all the statistics English presents is his estimation that between 10,000 and 16,000 Commonwealth air force casualties during each year of the war were likely associated with psychological stress and/or physical fatigue.¹⁵ This thesis builds on English's argument while assessing the impact of psychological trauma on the development of a culture which followed many wartime aviators into postwar civil aviation.

Aerodrome of Democracy: Canada and the British Commonwealth Air Training Plan 1939-1945 by E.J Hatch, is one of the few scholarly works dedicated to examining the history of the BCATP in detail.¹⁶ Most applicable to framing the arguments

¹⁰ Ibid., 680-755.

¹¹ Ibid., 526.

¹² English, *The Cream of the Crop*.

¹³ Allan D. English, "Canadian Psychologists and the Aerodrome of Democracy," *Canadian Psychology/Psychologie Canadienne*, Vol 33(4) (Oct 1992), pp. 663-674.

¹⁴ Greenhouse et al., *The Crucible of War*, 526.

¹⁵ Allan D English, *The Cream of the Crop*, 99-100.

¹⁶ F. J. Hatch, *Aerodrome of Democracy: Canada and the British Commonwealth Air Training Plan 1939-1945* (Ottawa: Minister of Supply Services Canada, 1983).

presented in this thesis, Hatch offers a review of the development of training procedures and a critical consideration of BCATP instructor capabilities. In doing so, Hatch began a critical, scholarly examination of both the successes and failures of the BCATP, a process which this thesis seeks to continue.

While not an academic work, Ted Barris's *Behind the Glory* provides considerable insight into the professional aviation culture fostered among pilots in the BCATP.¹⁷

While his narrative is more the work of a journalist than a historian, Barris can be applauded for producing what amounts to a written collection of oral histories, many of which offer glimpses into the subtle complexities of aircrew training and the social interactions of aircrew which in part defined the professional culture of the wartime pilot.

William Carter and Spenser Dunmore's *Reap the Whirlwind: The Untold Story of 6 Group, Canada's Bomber Force of World War Two*, provides a blend of academic and popular history to tell the operational and social story of Canadian airmen in Bomber Command.¹⁸ Carter and Dunmore relate, both through original primary source research and the retelling of personal recollections of veterans, the innumerable challenges that bomber crews faced in wartime training and operational flying. This thesis expands on Carter and Dunmore's arguments by considering the cultural implications of the transition of wartime pilots to postwar civil aviation.

Many international works likewise offer a valuable analysis of the wartime experiences of Canadian aviators. As thousands of Canadians served in the Royal Air Force (RAF) during the war, the histories of the RAF, and specifically RAF Bomber Command, offer additional insights into the evolution of aviation culture through a tacit

¹⁷ Ted Barris, *Behind the Glory: Training Heroes in Canadian Skies* (Toronto: Macmillan Canada, 1992).

¹⁸ William Carter and Spenser Dunmore, *Reap the Whirlwind: The Untold Story of 6 Group, Canada's Bomber Force of World War Two* (Toronto: McClelland & Stewart Inc., 1991).

consideration of attitudes towards flight safety and the social interactions of aircrew. Anthony Verrier's *The Bomber Offensive*, Norman Longmate's *The Bombers*, Max Hasting's *Bomber Command*, and John Terrain's *The Right of the Line*, are four such volumes.¹⁹

One topic which is rarely discussed in academic or popular literature is the domination of aviation by men. Offering one exploration of sexism in military aviation, Reina Pennington's article "Do Not Speak of the Services You Rendered': Women Veterans of Aviation in the Soviet Union,"²⁰ makes clear that the traditionally masculine domination of military aviation in the Soviet Union prevented women from playing any major role in post-war Russian aviation. Canada, it can be argued, took the male domination of aviation to even greater extremes by barring women from serving as flight crew in any capacity during the war and maintaining that tradition, both in the military and in commercial aviation, after 1945. The cross-cultural similarities and differences between the Russian and Canadian experience in this sense make Pennington's analysis useful in a comparative examination of gender bias in Canadian aviation.

While primarily a discussion of female flight attendants in Trans Canada Airlines, "Masculinity and the Making of Trans-Canada Airlines, 1937-1940: A Feminist Poststructuralist Account," by Albert J. Mills and Jean Helms Mills, discusses gender history in Canadian aviation by addressing the domination of the post-war industry by

¹⁹ Anthony Verrier, *The Bomber Offensive*, Second Edition (London: Pan Books, 1974). Norman Longmate, *The Bombers* (London: Hutchinson, 1983). Max Hasting, *Bomber Command* (New York: Dial Press, 1979). John Terrain, *The Right of the Line* (London: Hodder and Stoughton, 1985).

²⁰ Reina Pennington, "Do Not Speak of the Services You Rendered': Women Veterans of Aviation in the Soviet Union," in *A Soldier and a Woman: Sexual Integration in the Military*, eds. Gerard J DeGroot and Corinna Peniston-Bird (Harlow, Essex, England: Pearson Education Limited, 2000).

men.²¹ Making connections between the perception of masculinity and femininity in society at the time, and the masculine culture of military and bush aviation, Albert and Jean Mills offer a useful basis from which this thesis seeks to more closely examine the ramifications of the development of a professional aviation culture within an industry dominated by men and notions of masculinity.²²

By far the most numerous category of publication concerning RCAF aircrew culture is the personal memoir. Prominent among these are three books written by veteran RCAF bomber pilot J. Douglas Harvey.²³ Stories of drinking, sex, and the trials and tribulations of a young man learning how to fly and survive in the Second World War provide historians with an invaluable bottom-up perspective of the Canadian experience in Bomber Command. Other particularly noteworthy RCAF memories include Murray Peden's *A Thousand Shall Fall* and Walter Thompson's *Lancaster to Berlin*.²⁴ Through the level of personal detail they provide, these sources allow a fuller examination of the operational challenges that aircrew faced both in the air and in the social environments in which they lived, and the impacts of those experiences on the development of a professional aviation culture in Canada.

In comparison with the academic treatment of the history of military aviation in Canada, that of commercial aviation is still in its infancy. Apart from a small collection of

²¹ Albert J. Mills, Jean Helms Mills. "Masculinity and the Making of Trans-Canada Air Lines, 1937-1940: A Feminist Poststructuralist Account," *Canadian Journal of Administrative Sciences*, 23(1), 2006, pp. 34-44.

²² The corporate and operational culture of Trans Canada Airlines was heavily influenced by its original parent crown corporation, the Canadian National Railway.

²³ J. Douglas Harvey, *Boys, Bombs and Brussels Sprouts* (Toronto: McClelland and Stewart Limited, 1981). J. Douglas Harvey, *The Tumbling Mirth: Remembering the Air Force* (Toronto: McClelland and Stewart Limited, 1983). J. Douglas Harvey, *Laughter-Silvered Wings: Remembering the Air Force II* (Toronto: McClelland and Stewart Limited, 1984).

²⁴ Murray Peden, *A Thousand Shall Fall* (Stittsville, Ont.: Canada's Wings, 1979). Walter Thompson, *Lancaster to Berlin* (Toronto: Totem Books, 1987).

now dated works which address the politics and regulation of the industry, such as David Corbett's *Politics and the Airlines*,²⁵ and Garth Stevenson's *The Politics of Canada's Airlines: From Diefenbaker to Mulroney*,²⁶ the majority of histories of commercial aviation in Canada are those written either by aviation enthusiasts, experienced pilots, or by airlines wishing to tell their own stories. Prominent among those works are three chronological narratives of the history of Canada's two major airlines of the Twentieth Century.

Phillip Smith's *It Seems Like Only Yesterday: Air Canada, the First 50 Years*, was the first attempt by a major Canadian airline to document its own history.²⁷ Focusing on the political origins of Canada's national airline, the personalities of those at the top of the organization's corporate ladder, and on a few of the company's more prominent pilots, flight attendants and support personnel, it provides a useful though primarily top-down narrative of the history of Trans Canada Airlines/Air Canada. In doing so, Smith offers some limited insights into the agreements made between the RCAF and TCA and the attitudes of airline management towards flight safety, topics which will be developed further throughout this thesis.

The second comprehensive history of Air Canada, Peter Pigott's *National Treasure: The History of Trans Canada Airlines*, focuses primarily on the biographies of a few of the most prominent individuals in the airline rather than on the 'average' employee.²⁸ Nevertheless, Pigott allows voices of a number of flight attendants, office

²⁵ David Corbett, *Politics and the Airlines* (Toronto: University of Toronto Press, 1965).

²⁶ Garth Stevenson, *The Politics of Canada's Airlines: From Diefenbaker to Mulroney* (Toronto: University of Toronto Press, 1987).

²⁷ Phillip, Smith. *It Seems Like Only Yesterday: Air Canada, the First 50 Years* (Toronto: McClelland and Stewart, 1986).

²⁸ Peter Pigott. *National Treasure: The History of Trans Canada Airlines* (Madeira Park, BC: Harbour Publishing, 2001).

staffers, airport ground support personnel and a select number of pilots to show through. Perhaps most useful to the focus of this thesis, *National Treasure* offers a general, albeit brief, overview of the wartime operations of the airline and of its cooperation with the RCAF. Of similar value to *National Treasure*, in terms of its contributions to understanding the evolution of Canadian aviation which this thesis seeks to advance, is Pigott's examination of Canadian Pacific Airlines, *Wing Walkers: The Rise and Fall of Canada's Other Airline*.²⁹

In addition to the organizational histories of Canada's major airlines, a few personal memoirs stand out as being especially valuable to the discussion of the cultural history of Canadian aviation. One is George Lothian's *Flight Deck*, a documentation of the experiences of one of the first, and perhaps most influential pilots within TCA.³⁰ Lothian's portrayal of the state of commercial aviation in Canada between 1938 and the early 1970s, as well as of his training and experiences in the early days of TCA and its involvement with the RCAF, sheds light on cultural aspects of Canadian aviation that are often omitted in more general historical treatments of the industry, and which will shape the focus of the following discussion.

Finally, coming from outside the fields of academic and popular history is perhaps one of the most important books written on the concept of aviation culture. Robert Helmreich's and Ashleigh C. Merritt's *Culture at Work in Aviation and Medicine: National, Organizational and Professional Influences*, provides the definition of professional aviation culture used throughout this thesis.³¹ Furthermore, Helmreich's

²⁹ Peter Pigott. *Wing Walkers: The Rise and Fall of Canada's Other Airline* (Madeira Park, BC: Harbour Publishing, 1998).

³⁰ George Lothian. *Flight Deck* (Toronto: McGraw-Hill Ryerson, 1979).

³¹ Helmreich and Merritt. *Culture at Work in Aviation and Medicine*.

and Merrit's analysis of the role of professional culture in aviation as it relates to safety, shapes the core structure of the following discussion.

Chapter One: Royal Canadian Air Force to Trans Canada Airlines

In the 1920s and early 1930s, few passenger-carrying airlines existed between the major metropolitan centers of Canada. This was due to a lack of aviation infrastructure spanning the nation, the limited technological capabilities of aircraft at the time, and an economic climate which fostered a type of flying very different from that recognisable in large-scale airline operations today. Given the turbulent nature of the aviation industry and economy in the interwar years, both private business interests and the Canadian government had been hesitant to invest in the airfields and navigational aids required to develop a trans-continental air route. Additionally, while aviation was greeted in the interwar period with excitement and intrigue by a large portion of the Canadian public, a general hesitancy existed towards using what was still widely considered a novel and unsafe method of transportation.

The state of interwar Canadian aviation was in turn reflected in the professional culture of pilots within the industry. In adapting to a lack of ground-based infrastructure, a generation of pilots pioneered a type of flying that catered primarily to the needs of miners, cartographers and inhabitants of northern and remote communities. Celebrated as rugged and adventurous, the bush pilot acquired the image both within the profession and in popular culture, as later chapters will show, of a quasi folk-hero who developed his skills through improvisation and risk-taking in the air. During the Second World War as aircraft technology and flight training evolved to minimize casualties then increasingly associated with poor weather, long-distance, multi-engine instrument flying, a new professional aviation culture evolved that was quite different from that of the bush

pilot. While subsequent chapters describe this evolution in greater detail, the following seeks to demonstrate that the wartime generation of pilots were uniquely influential on the development of postwar civil aviation in Canada. It does so by examining the transition of Royal Canadian Air Force pilots to the largest airline operating in Canada in the 1940s and 1950s, Trans Canada Airlines.

At the outset of the war TCA, the nation's largest trans-national air carrier, had only recently established passenger carrying flights.¹ Founded in 1937, the first year of TCA's flight operations was spent training pilots in the procedures of instrument flying while simultaneously carrying mail across the newly completed, government funded trans-Canada air route. After its second year of passenger carrying operations in 1939 TCA had carried a modest 21,000 passengers.² During the war, demands for airline service increased as greater pressures were placed on domestic and international transportation networks. In the last year of the war TCA carried over 183,000 passengers across a much expanded route system which included the world's first scheduled trans-Atlantic passenger carrying service.³ Yet in comparison to the wartime years, TCA's immediate postwar growth, which reflected that of Canadian civil aviation more broadly, was exponential. In 1946 TCA carried over 305,000 passengers, representing an increase of 157% from the year before.⁴ By 1950 that number jumped

¹ Peter Clancy, *Micro-Politics & Canadian Business: Paper, Steel, and the Airlines* (Toronto: Broadview Press, 2004), 224.

² Library and Archives Canada (Hereafter LAC), RG70, Microfilm Reel 1 of 2. "Trans Canada Airlines Annual Report: 1939," 19 Mar 1940.

³ *Ibid.*, "Trans Canada Airlines Annual Report: 1945," 15 Mar 1946, The TCA operated Government of Canada Trans-Atlantic Service (CGTAS), transported mainly diplomatic and senior military personnel between North America and Britain during the war. Converted Lancaster bombers were flown by experienced TCA pilots and RCAF navigators for the service which represented the first sustained, scheduled trans-Atlantic passenger carrying air-service in history.

⁴ *Ibid.*, "Trans Canada Airlines Annual Report: 1946," 15 Mar 1947.

to nearly 800,000.⁵ Five years later it approached 1.7 million.⁶ While the increase in the size of aircraft from the ten-passenger Lockheed Electras ubiquitous of the wartime era to the forty-four-passenger Canadair North Stars of the 1950s made the carrying of passengers over longer distances increasingly efficient, the number of pilots who flew those aircraft nevertheless increased at a rate which paralleled passenger expansion.

In 1939, fifty-four captains and first officers flew TCA's fleet.⁷ By 1943 the increase in demand for domestic airline service that came with the war more than doubled this number to 111.⁸ Beginning in 1944, TCA began hiring RCAF repatriates, or "repats" as ex-air force pilots who joined the airline became known. By 1945 approximately sixty five of these men flew for TCA, bringing the total number of pilots in the company to 176.⁹ During the company's immediate postwar expansion, nearly every new TCA hire was a repat so that by 1947, 325 ex-RCAF airmen had passed through TCA's pilot training system.¹⁰ Exactly one decade later, approximately the year that the last wartime aviators were hired by the company due to age restrictions on new-hires, 598 pilots staffed the airline, an increase of almost 340% since the cessation of hostilities.¹¹ In total, approximately 440 RCAF veterans of the Second World War flew for TCA.¹²

⁵ Ibid., "Trans Canada Airlines Annual Report: 1950," 26 Feb 1951.

⁶ Ibid., "Trans Canada Airlines Annual Report: 1955," 29 Feb 1956.

⁷ Ibid., "Trans Canada Airlines Annual Report: 1939," 19 Mar 1940.

⁸ Ibid., "Trans Canada Airlines Annual Report: 1943," 10 Mar 1944.

⁹ Ibid., "Trans Canada Airlines Annual Report: 1945," 15 Mar 1946.

¹⁰ LAC, RG 70, Vol. 458, File F-1575-1.S, H.W. Seagrim, "Report on number of pilots screened out of TCA." 17 Mar 1945.

¹¹ The average age of an RCAF pilot who applied to TCA in 1945 was twenty five. By 1957, wartime pilots were in their late thirties and thus past the standard age limit for new TCA hires, which fluctuated between twenty-six and thirty. See also, LAC, RG 70, Vol. 89, File 1575-11, "Pilot's Seniority System List," 11 Jan 1957.

¹² Gus Bennett, "Trans Canada Air Lines Wartime Pilots," Airline Pilots of Canada CD, 1st Edition, Toronto Ontario: Retired Airline Pilots of Canada, 2006. While this article does not indicate how the

A typical pilot who joined TCA's ranks in 1945 was in his mid-twenties with upwards of 2,000 hours of flight experience on large, multi-engine aircraft in the wartime RCAF.¹³ He had been processed through a series of rigid medical screening tests both during his time in the air force as well as with TCA upon hiring and was, as far as testing at the time could determine, in peak physical and mental health at the outset of his civilian career. This, in turn, maximized his chances of reaching retirement age before having to give up flying for medical reasons. Given the rapid expansion of airline service in the immediate postwar years and the pressing need for captains to command TCA's rapidly expanding fleet, a first officer (co-pilot) hired in 1944 or 1945 could attain captain status in as little as one year of service.¹⁴ By the late 1950s the vast majority of senior captains in the airline were, therefore, of the wartime generation. These men remained at the height of the company's seniority list for the duration of their careers with TCA/Air Canada.¹⁵ As many of these pilots retired in their mid-sixties, it was not until 1983 that the last wartime repat left the airline.¹⁶

In the context of airline operations where senior captains typically mentor first officers for many years before the junior pilot is promoted, RCAF repats had an immeasurable influence over the development of subsequent generations of airline pilots in Canada. In 2010, many of the senior captains now retiring from the Canadian aviation industry, and particularly those from Air Canada, were mentored by the wartime generation. In many cases there is only a single generational gap between the wartime

number of 440 was calculated, it does seem to correspond with pilot seniority lists from the 1950s. See: , LAC, RG 70, Vol. 89, File 1575-11, "Pilot's Seniority System List," 11 Jan 1957.

¹³ *Between Ourselves* (Montreal: Trans Canada Airlines, May 1945), 16.

¹⁴ "Pilot Training Program," *Between Ourselves*, Midsummer Issue 1945, 6.

¹⁵ TCA changed its name to Air Canada in 1964.

¹⁶ Gus Bennett, "Trans Canada Air Lines Wartime Pilots," *Airline Pilots of Canada CD*, 1st Edition, Toronto Ontario: Retired Airline Pilots of Canada, 2006.

aviators who pioneered the postwar Canadian commercial aviation industry and the new hires filling the ranks of first-officers in Canada's largest airlines today. The skills and cultural practices that the wartime generation developed not only shaped the immediate postwar commercial aviation industry in Canada, but for reasons inherent to the professional culture that formed around them and which they passed on to subsequent generations of pilots, they will continue to have a lasting legacy on Canadian aviation in the 21st century. To better understand their legacy, however, one must first understand the historical context of their transition from combat to civil aviation.

The main force driving TCA's expansion during the war was the rapid increase of political, military and diplomatic passengers who required rapid, long-distance transportation in support of the war effort. Yet as passenger demand increased, TCA lost a number of pilots to the RCAF, RAF and the nascent trans-Atlantic ferry service tasked with transporting aircraft from North America to wartime England. This exodus of trained pilots led TCA's president, H. J. Symington, to seek ways of preventing further losses. Writing to one of the founding fathers of TCA, then Minister of Munitions and Supply C. D. Howe, Symington warned of the "Dangerous manace (sic)" the loss of TCA pilots represented to the company.¹⁷ Symington cautioned Howe that "we are faced with the relatively slow disintegration of the organization" if the trend were allowed to continue. Howe apparently shared this concern, stressing to Symington that "everything possible must be done to maintain Trans Canada as an active organization, if only to protect the postwar position [of the company]."¹⁸

¹⁷ LAC, RG 70, Vol. 6, File TCA-1-2-7, H.J Symington, Letter to C.D. Howe, 20 July 1941.

¹⁸ Ibid., C.D. Howe, Letter to H.J Symington, 1 Aug 1941.

The first step in stemming the flood of TCA pilots out of the company had been taken shortly after Canada's declaration of war against Germany. By an Order in Council, TCA had been made an essential service for the war effort. For the duration of the war, TCA pilots required a separate Order in Council to leave the airline. Yet as Symington's letter related, this was not sufficient to prevent those determined enough to leave the company to do so. By December 1941 sixty-six TCA employees, a number of whom were pilots, had left.¹⁹ As a result of the difficulties experienced by TCA in retaining and hiring new aircrew, in October 1942 it approached the RCAF on the matter of employing pilots who were then still enlisted in the service. Acknowledging that the RCAF had priority for trained pilots over commercial carriers, TCA's management stressed that RCAF aviators were required to man the company's growing fleet if TCA's "essential services" were to be maintained.²⁰

Resulting from the request, negotiations began in 1942 between TCA representatives and the RCAF which tentatively concluded that a small group of pilots who had flown commercially before the war, and who had been employed as instructors in the BCATP, were eligible for transfer to TCA. It was not, however, until late 1943 that seven of those instructors were granted indefinite leaves of absence from the RCAF to allow them to fly with TCA. A failure to clarify the terms of the contract which specified when the RCAF was warranted to take these pilots back, as well as disputes over rates of pay and seniority status in the airline, led TCA to reject two of them.²¹ Concern that

¹⁹ Pigott, *National Treasure*, 105.

²⁰ In a 1942 letter to RCAF Headquarters, TCA let it be known that if the RCAF were to release experienced pilots from service it thought it had "as much right to engage them as any other Canadian operator." LAC, RG70, Vol. 458, File F-1575-1.R.S., George, "Letter to Commander C.P. Edwards," 6 October 1942.

²¹ Inter TCA correspondence indicates that some potential pilot candidates from the RCAF were unhappy with the prospect of flying as co-pilots with TCA as they believed their experience warranted their being

the remaining five would be recalled by the RCAF led to negotiations for the establishment of a more comprehensive agreement that allowed TCA to be assured of retaining the new pilots in all but the most pressing of wartime emergencies. As the airline relied on the experience gained by first officers flying scheduled routes to build the slowly growing cadre of captains in the company, losing experienced first officers who were nearing captain status to the RCAF, should they be suddenly recalled, represented a major intellectual and economic blow for TCA.

During the negotiations between TCA and the RCAF, C.D. Howe employed his considerable political influence to ensure that the airline received the flight crews necessary to continue its wartime operations and to place it in a strong manpower footing for postwar expansion.²² Liaising between the president of TCA, Minister of National Air Defence and negotiators for the RCAF, Howe was instrumental in facilitating the first working draft of a preliminary agreement that was reached in mid-November 1943. A more formalized agreement was reached in late December that saw the first pilots with operational experience overseas, or with fighting units in Canada such as with Eastern Air Command, join TCA by January 1944.²³

Concerns expressed in early 1943 by Minister for National Air Defence, C.G Power, indicated that RCAF headquarters saw these first transfers as allowing the airline to become a "sheltered occupation"²⁴ for air force personnel. Power was

hired as captains. LAC, RG 70, Vol 10, File TCA-1-1-16, Letter from V.P., T.C.A., C.T. Larson, to Director of Air Services, Department of Transport, J.A. Wilson, 25 Aug 1943. And, Ibid., Letter from O.T. Larson to J.A. Wilson, 13 September 1943.

²² Ibid., Letter from C.D. Howe to Vice President TCA Symington, 8 October 1943.

²³ LAC, RG 70, Vol. 10, File TCA-1-1a-16.W.F. English, letter to H.J. Symington, "Pilot Training," 29 February 1944.

²⁴ "Operational" was defined as a tour of duty in a combat theatre. "Sheltered Occupation" is the term used by J.A. Wilson. LAC, RG 70, Vol. 10, File TCA-1-1-16."Letter to C.T. Larson, V.P., TCA," 30 Aug 1943.

concerned that the RCAF would be criticized both from within the air force as well as from the public for allowing pilots who had not faced the enemy to benefit from well paid and secure employment with TCA. This, in turn, led the RCAF to adopt a policy which specified that "only officers who had a tour of duty on the fighting fronts could be considered [for transfer]."²⁵

While it appears that the original RCAF/TCA pilot transfer agreement has not been preserved, copies of the agreement which were sent to RCAF Operational Training Units (OTUs) in Canada targeting tour-expired instructors at those bases, have.²⁶ These letters informed RCAF pilots that under a recently concluded agreement they would be afforded the opportunity to "become associated with T.C.A. for training and employment as First officers with a view to eventual employment as Captains."²⁷ The emphasis on the transition to Captain had been included specifically to assure airmen that the perceived subordinate status of being a co-pilot would be only temporary.

As C.G. Power's earlier concerns had indicated, however, not all RCAF pilots qualified for the transition. The terms of the agreement stipulated that eligible pilots "would be selected from those who have served an operational tour overseas."²⁸ This included airmen who had an operational tour with Eastern Air Command flying maritime patrol missions from Canada.

²⁵ Ibid.

²⁶ "Tour Expired" refers to RCAF airmen who had completed an operational tour and been re-circulated back into the RCAF in a non-combat capacity.

²⁷ Directorate of History and Heritage (Hereafter DHH), File 181.009 (D72), A.L. Morfee "RCAF Pilots for Trans-Canada Airlines," 27 Dec 1943.

²⁸ Ibid.

Pilots whose application for transfer had been approved by both the RCAF and TCA were placed on leave from the air force without pay effective the date of their reporting for service to TCA. This allowed the RCAF to recall the airmen in time of need, though there is no indication that this ever occurred. It also allowed pilots to continue to wear their military uniforms while not on duty with TCA. Pay was commensurate with the flight experience of individual pilots, though it was made clear that this would “not to prejudice the position of ex-T.C.A. men [then] in the service who return and who were guaranteed their positions.”²⁹ These terms remained largely unchanged until the end of the war when restrictions on who could apply for transfer were marginally loosened. It was not until late spring 1945, however, that senior RCAF aircrew without operational experience, and a select few exceptionally well qualified civilian pilots, were considered for employment by TCA.³⁰

By March of 1945 TCA was targeting graduates from a recently opened RCAF special transport school in addition to RCAF aircrew returning directly from overseas. The graduates of this school had returned from operations primarily with Bomber Command and had been sent to the special conversion school at Moncton, New Brunswick in lieu of being sent to a Service Flight Training Schools (SFTS) or OTUs to instruct.³¹ Yet due to the limited number of pilots who could be processed through this school, the majority of repats still came directly from operational units or from training units where they had been sent to instruct following the completion of their tours.

²⁹ Ibid.

³⁰ LAC, RG 70, Vol. 10, File TCA-1-1-16, W.F. English, letter to H.J. Symington, "Application of Flight Personnel Other than RCAF Repatriates," 2 June 1945.

³¹ Ibid., W.F. English, letter to H.J. Symington, "Repatriated R.C.A.F. Pilots," 20 March 1944.

Based on a collection of pilot biographies compiled in 2006 by the Retired Airline Pilots of Canada Association, it appears that TCA primarily sought men with experience flying either maritime patrol or bomber aircraft. Out of 114 biographies of RCAF/TCA repats collected, fifty five percent had wartime experience in maritime patrol and bomber operations.³² The remainder of the repats had experiences fairly evenly distributed between transport, training, trans-Atlantic ferry, fighter and miscellaneous flying duties. Maritime patrol and Bomber pilots therefore represented by far the largest identifiable groups of wartime pilots to join TCA beginning in 1944. There are a number of reasons for this preference, a few being obvious.

The choice of maritime patrol aircrew is readily understandable given the expansion of TCA's trans-Atlantic operations both during the final years of the war and in its postwar development. Those who had already learned and applied the skills of flying long distances over the notoriously hazardous skies of the North Atlantic in large, multi-engine aircraft, were prime candidates for service on TCA's Toronto to London, England run.

The skills that bomber pilots brought with them to airline operations after the war were developed and honed, to a significant extent, through the experience of operational flying in aircraft similar to the type flown by TCA. Flying the Canadian Government Trans-Atlantic Service (CGTAS), TCA pilots operated a modified version of Bomber Command's vaunted Avro Lancaster known as the Lancastrian. That the Lancastrian continued to see service in TCA until 1947 made bomber pilots with prior experience on the Lancaster valued additions to TCA's staff beginning in 1944. Yet

³² Retired Airline Pilots of Canada (various authors), *Airline Pilots of Canada CD*, 1st Edition, (Toronto: Retired Airline Pilots of Canada, 2006).

perhaps even more influential than the Lancastrian in this respect was TCA's choice for its postwar fleet of long range aircraft.

Planning its postwar expansion early on in the conflict, TCA commissioned a study group in 1941 to determine which aircraft would best suit its peacetime needs. The report recommended a modified version of the MacDonal Douglas DC-4, a civilian version of the C-54 Skymaster.³³ While the body of the aircraft was to remain relatively unchanged from MacDonal Douglas's default configuration, TCA's choice of engine was the Rolls Royce Merlin. Used for many wartime RCAF and RAF aircraft, it had served Bomber Command well in the type of flying expected of postwar airliners while powering large multi-engine bombers such as the Lancaster. Built by the Canadair aircraft manufacturer, the aircraft that resulted was dubbed the DC-4M (Merlin) North Star.³⁴ While the engine had proved itself, if not without incident, on TCA's trans-Atlantic run aboard the Lancastrian, it was known to be a powerful though particularly sensitive engine to operate.³⁵ Requiring a great deal of care, some aircrew recall that the North Star, with its four Merlin engines, "was as much airplane to handle as any two-man crew could want."³⁶ As such, flown by a pilot without any prior experience on the Merlin, the engine threatened to be a particularly costly choice for the company. Given this, it was very much in TCA's interests to employ pilots who had prior experience with the Merlin family of engines and who had already become accustomed to the long-distance

³³ Larry Milberry, *The Canadair North Star* (Toronto: CANAV Books, 1982), 10.

³⁴ The RCAF flew the DC-4M under the name *Argonaut* and CP Air flew it, only briefly, under the moniker *Canadair Four*.

³⁵ The Lancastrian was a modified version of the Lancaster intended for passenger transportation.

³⁶ Milberry, *The Canadair North Star*, 68.

instrument flying in multi-engine aircraft typical of airline operations.³⁷ Bomber Command therefore provided a readily available supply of such men.

Trans Canada Airlines was not the only airline to find that ex-bomber pilots proved especially valuable for the operation of the DC-4M. British Overseas Airways Corporation (BOAC), which was the only other major airline to order the aircraft from Canadair during its initial production run, had absorbed, en-bloc, pilots of the British South American Airways Service who had previously operated in RAF Pathfinder units.³⁸ As Larry Millbury, one of Canada's foremost popular aviation historians and an authority on the *North Star* notes, these "pilots were completely familiar with the Rolls Royce Merlin engine which powered the Mosquito, Lancaster and Lancastrian, the York and the Tudor aircraft. It [the Merlin] was without doubt the tried and trusted friend which they were glad to see."³⁹

At the end of the war pilot applications began flooding directly into TCA. These came mainly from ex-service pilots who could not take advantage of the RCAF/TCA transfer agreement which specified that only active RCAF pilots could transfer to TCA.⁴⁰ With the consent of the RCAF, this led the airline to begin considering applications from ex-service pilots directly to its corporate offices rather than having all applications processed through RCAF headquarters. Although TCA agreed to continue to "give first consideration to ex-R.C.A.F. personnel, particularly those who (had) completed an

³⁷ Canadair realized this also. During the aircraft's first test flights Canadair relied heavily on the experience of former bomber pilots to put the *North Star* through its tests. Milberry, *The Canadair North Star*, 26.

³⁸ BOAC adopted the RCAF's name for the *North Star*, the *Argonaut*.

³⁹ Milberry, *The Canadair North Star*, 116.

⁴⁰ LAC, RG 24, Vol. 3326, File 286.4.17 vol.3, Letter from J.H. Tudhope, Operations Manager TCA to Air Marshal R. Leckie, Chief of Air Staff, Department of National Air Defence, 26 September 1945.

operational tour,"⁴¹ by the late summer of 1945 the formalized agreement between the RCAF and TCA ended. While this meant that the RCAF was no longer directly involved in choosing TCA aircrew, the airline continued, almost exclusively, to draw on the extensive pool of ex-service pilots.

Although the largest airline in Canada at the time, TCA was not the only Canadian operation seeking qualified pilots with wartime experience. Canadian Pacific Airlines (CPA) had not requested pilots from the RCAF in the final years of the war, however during the airline's rapid postwar expansion its demand for new pilots rose.⁴² As a result CPA, along with many smaller operations such as the Canadian Flying Clubs, sought to secure experienced pilots for the resumption of peacetime operations and began hiring ex-RCAF pilots en masse in 1945.⁴³

Indeed it was especially difficult for any civilian pilot without wartime experience to find a flying job in Canada in the decades immediately following the war. For civilian pilots who sought training at civilian flight schools in the late 1940s, prospects of finding employment once they earned their licences were slim. Evidence of this can be seen in a proposal made by the Aero Club of B.C., a civilian flying school which found it difficult to attract new students in 1946, to train "the right men" of TCA's choosing who could

⁴¹ LAC, RG 24, Vol. 3326, File 286.4.17 vol.3. Letter from J.H. Tudhope, Operations Manager TCA to Air Marshal R. Leckie, Chief of Air Staff, Department of National Air Defence, 17 September 1945.

⁴² This had been due to downsizing at CPA resulting from a government policy which required railroad companies to disband or dispose of all airline holdings, and because of TCA's growing monopoly over trans-Canada air route operations. LAC, RG 24, Vol. 3326, File 286-4-12 Vol. 3, Letter from J.D. Jennison, Air Liason Officer, Department of Labour, to John Andoff, Department of Veterans Affairs, "Employment of Ex-Air Force Personnel: Trans-Canada Airlines," 2 Nov 1945.

⁴³ Ibid.

reasonably expect to be hired by the airline at a later date.⁴⁴ TCA's response to the proposal is indicative of the state of Canadian aviation at the time.

Since the cessation of hostilities we have experienced very little difficulty in obtaining suitable applicants between 23 and 26 years of age who possess approximately 1500 hours first pilot [Captain] time on medium and heavy aircraft...We are sorry that at the present time it does not appear possible to avail ourselves of your offer.⁴⁵

Upon being hired, both during and after the period of the formalized agreement between the air force and TCA, a typical repat was sent for training at the airline's Winnipeg school. In 1945 these men were filtered through the training system in classes of between six and ten at a time.⁴⁶ Among classes which familiarized the new hires with the aircraft they were about to fly, considerable attention was placed on instrument training, radio work, navigation and meteorology. Often for the first time since their time at Service Flight Training School in the BCTP, repats were re-acquainted with the Link trainer, a pneumatically controlled flight simulator useful for teaching, honing and testing instrument flight procedures.⁴⁷ If a pilot had met all the requirements and passed the appropriate tests after six weeks of training, he would be commissioned as a line-duty first officer co-piloting an aircraft on one of TCA's increasingly expanding domestic and international routes.

While it is difficult to gauge the skill level of wartime RCAF pilots in relation to the type of flying demanded by a peacetime airline, a letter from the assistant superintendant of flight operations of TCA to the airline's president offers a probable

⁴⁴ LAC, RG 70, Vol. 458, File 1575-1, Letter from T.H. Finley, Aero Club of BC, to H. W. Seagrim, TCA, 25 Oct 1946.

⁴⁵ *Ibid.*, Letter from H. W. Seagrim, TCA, to T.H. Finley, Aero Club of BC, 9 Dec 1946.

⁴⁶ After 1945 these classes were considerably expanded. 20 students per class was not uncommon in 1946.

⁴⁷ *Between Ourselves* (Montreal: Trans Canada Airlines, May 1945), 19.

indication of a general trend. The majority were considered to be “good, very good,” or “excellent TCA Material,” yet their flying techniques, “very definitely reflected lack of precision training and practice which to airline flying is so necessary.”⁴⁸ Addressing this deficiency, flight training of these new employees was designed to teach “the most elementary principles of precision flying.” Additionally, it was decided that in order to ensure that a pilot was “able to apply the principles of precision instrument flying to subsequent [training],” instrument instruction was commenced at the outset of airline conversion.⁴⁹ Standards to which pilots were held in this training were high. In spite of the fact that only those considered to have possessed superior flying skills were recommended for service with TCA, by January 1947, 25 ex-RCAF pilots had been screened from the training program or from flight-line duties with the airline for performance issues.⁵⁰

It is clear, therefore, that by 1945 the wartime generation of pilots were posed to play a formative role in the development of the postwar civil aviation industry in Canada. TCA’s expansion, and indeed that of Canadian civil aviation more broadly in the postwar period, was able to occur due to the thousands of pilots who learned their trade during the Second World War. It is to a closer examination of their wartime experiences that the following now turns. It does so by acknowledging that wartime pilots who transitioned to civil flying after the war had, as TCA’s annual financial report for 1946 prophesized, “the future of Canadian aviation in their hands.”⁵¹

⁴⁸ LAC, RG 70, Vol. 10, File TCA-1-1-16, Letter from H.W. Seagrim to H.J Symington, 12 April 1944.

⁴⁹ Ibid.

⁵⁰ LAC, RG 70, Vol. 458, File F-1575-1.S, H.W. Seagrim “Report on number of pilots screened out of TCA.” 17 Mar 1945.

⁵¹ LAC, RG70, Microfilm Reel 1 of 2, Trans Canada Airlines, “Trans Canada Airlines Annual Report: 1946,” 15 Mar 1947.

Chapter Two: Interwar Aviation.

In 1939 flight training in Canada was embryonic in comparison with what it became by 1945. Not only was this evident in the number of pilots Canadian flight schools were producing, but also in terms of the type of instruction they provided. During the Second World War Canadian flight training emphasis shifted from preparing students for the 'stick and rudder' skills required of bush flying and aerial combat reminiscent of the First World War to the exacting standards of flying on instruments in highly sophisticated, multi-system, high performance aircraft operating in increasingly adverse atmospheric conditions. The shift was a result of a combination of military pressures and technological developments which together expanded and complicated the environment in which aviators were able to operate. By having both the means and motivation to fly faster, farther, higher and in more hostile conditions than ever before, Canadian pilots were forced to rapidly adapt to a new era in aviation history.

Our understanding of flight as a science and profession developed in fits and starts in the first decade of the twentieth century before advancing rapidly during the First World War. War showed, however, that the application of aviation to the military was catastrophic for the aviator. In the Royal Flying Corps (RFC) alone, between 1914 and 1918 approximately 6,000 pilots died in combat while a further 8,000 died training in England.¹

While aviation in Canada developed roughly in parallel with global trends in the industry before World War One, after 1918 Canadian aviation took on a life of its own.

¹ Linda Robertson, *The Dream of Civilized Warfare: World War One Flying Aces and the American Imagination* (Minneapolis: University of Minnesota Press, 2003), 106.

Primarily a tool of northern and remote economies with only a handful of small airlines developing city to city operations, flying in Canada became the domain of the bush pilot. While a combination of the expense of aviation technology and infrastructure and the turbulent world economy of the twenties and thirties prevented the expansion of large passenger carrying air-service between Canada's dispersed urban centers, a host of small, often one-man operations sprang up across the nation.² While these companies forged flying routes on mail contracts and cargo-runs, the majority of passenger-carrying operations developed in Canada's north. Taking miners and other resource exploiters to remote, rugged locations, bush pilots developed reputations for delivering passengers and freight through significant adversity to some of the most sparsely populated locations in the country. As a result of the cut-throat competition of bush flying in the 1920s and 1930s, where the lifespan of an average venture was measured in months rather than years, the industry bred a degree of risk taking among pilots who tended to overload their aircraft and push through questionable weather to ensure profits.³

Regulating these companies was nearly impossible due to the number of inspectors required to patrol the vast stretches of the north. As one example of the lack of regard for regulations among many northern bush operators, James Richardson, the founder of Canadian Airlines (CAL), complained throughout the 1930s that much of his

² Peter Pigott, *Wing Walkers: A History of Canadian Airlines International* (Toronto: Harper Publishing, 2003), 14,

³ Robyn Thomas, Albert J. Mills, Jean Helms-Mills, *Identity Politics at Work: Resisting Gender, Gendering Resistance* (New York: Routledge, 2004), 150. Peter Pigott, *Wingwalkers: A History of Canadian Airlines International* (Toronto: Harbour Publishing, 2003), 67.

competition flouted the safety regulations imposed by the government.⁴ Told bluntly by regulators that they did not have enough inspectors to cover the remote Canadian north, Richardson's CAL faced regulatory scrutiny when it began flying into major metropolitan centers while its competition could continue their "fly by night" operations in the more remote corners of the country.⁵

In contrast to the United States, where population density allowed for large inter-city passenger carrying airlines to form as early as 1934, and where regulations and training emphasized the need for pilots to develop instrument flying skills, flight training in Canada developed alongside the volatile world of the bush pilot.⁶ Requiring visual navigation over mostly uninhabited taiga, tundra and lakes, where even the most primitive forms of land-based navigational aids were non-existent, flying was done primarily with reference to the ground in daylight, and at relatively low altitudes in rugged, simple aircraft.

Due to high levels of competition resulting from a plentiful supply of First World War aviators desperate for flying jobs and the plethora of surplus aircraft that they had flown during the war, the more a pilot could carry and the quicker he could deliver his cargo through often poor weather, the more successful he and his business would become.⁷ As a result of this pressure, ad-hoc adventurism and improvisation in the air

⁴ Later Canadian Pacific Airlines, then again Canadian Airlines.

⁵ The RCAF was responsible for enforcing aviation regulations during most of the interwar period. See also: Peter Pigott, *Wingwalkers: A History of Canadian Airlines International* (Toronto: Harbour Publishing, 2003), 67.

⁶ Pigott, *Wingwalkers*, 71. And Phillip Smith, *It Seems Like Only Yesterday: Air Canada, The First Fifty Years* (Toronto: McLealan & Stewart Ltd. 1986), 8.

⁷ Peter Pigott, *National Treasure: The History of Trans Canada Airlines* (Toronto: Harbour Publishing, 2001), 108-109.

shaped the profession. This, in turn, helped foster a romanticized image of the daring, adventuresome and risk-taking bush pilot in popular Canadian culture.⁸

To be more precise, the image of bush pilots was that of men overcoming adversity. Interwar bush flying was strictly a male preserve, due in part to the fact that only men were allowed to fly in the Commonwealth air forces during the First World War, and that those men went on to dominate the post-war aviation industry not only in Canada but in Europe and the USA as well.⁹ The few women who worked for bush operations were typically employed as stenographers or office assistants, and it was not until Trans Canada Airlines began hiring female flight attendants in 1938 that women acted as flight crew for commercial operations in Canada for the first time.¹⁰ Highlighting the masculine nature of the bush pilot culture, in *Identity Politics at Work: Resisting Gender, Gendering Resistance*, Robyn Thomas and Albert and Jean-Helms Mills describe the gendered-oriented culture of the industry in the interwar years:

In social conditions of danger, isolation, and uncharted and often harsh territory...the archetypal bush flyer was portrayed as daring, heroic, tough, rugged, womanizing, and self reliant. Women were viewed as second class-citizens whose involvement in bush flying was, at best, as cleaners, cooks and sexual partners.¹¹

It was the gendered structure of professional aviation which originated during the First World War and was perpetuated in the interwar years that was subsequently entrenched within a widespread professional aviation culture during the Second World War. That the vast majority of pilots in Canada in 2010 are still men is likely due to this

⁸ Pilots such as “Wop” May and “Punch” Dickens became legends of the interwar Canadian aviation industry as bush pilots. Movies such as “Captains of the Clouds” and “Bush Pilot” perpetuated this image in popular culture.

⁹ Prior to this, all flight attendant duties were performed either by the First Officer (copilot) or a male steward. Albert J Mills, *Sex, Strategy and the Stratosphere* (New York: Palgrave Macmillan, 2006), 145.

¹⁰ Phillip Smith, *It Seems Like Only Yesterday* (Toronto: McClelland and Stewart, 1986).

¹¹ Robyn Thomas, Albert J. Mills, Jean Helms-Mills, *Identity Politics at Work: Resisting Gender, Gendering Resistance* (New York: Routledge, 2004), 151.

cultural legacy. As of March 2010 Air Canada, for example, employs only 132 women pilots, representing just 4.2% of the airline's total piloting staff.¹²

While bush flying was in large measure defined by a degree of risk taking that often put concerns of safety behind those of profit, bush pilots developed impressive skills at their trade. Indeed, many of those skills were transferrable to the type of flying the Canadian military was conducting in the interwar period. Employed primarily in photographic and cartographic surveying, forest fire patrols and other civilian-oriented duties, the pilots of the Canadian Air Force (CAF), which formed as a service independent from the RFC in 1918, were widely regarded as "bush pilots in uniform."¹³ Yet partly due to neglected air force budgets and what the official history of the RCAF described as a "ramshackle administrative system,"¹⁴ the CAF, and later the RCAF, was limited in its military capabilities for the duration of the interwar period, functioning effectively as an official extension of the civil aviation industry.¹⁵

Such was the state of Canadian aviation in 1939. Flight training schools reflected the bush-pilot culture with club instructors having gained experience, or otherwise taught by those who had experience, in Canada's north, the RCAF or the RFC/RNAS.¹⁶ Training at civilian and military schools taught the skills required for daylight, visual flying, and the potential emergency situations that a pilot in those circumstances could expect to face. Instrument training, which taught the procedural and safety oriented skills required to fly in poor weather or otherwise without visual reference to the ground,

¹² Air Canada, email correspondence with author, 15 March 2010.

¹³ Douglas, *Creation of a National Air Force*, 31.

¹⁴ Douglas, *Creation of a National Air Force*, 134.

¹⁵ The CAF became the RCAF in 1924.

¹⁶ Peter Pigott, *Wingwalkers: A History of Canadian Airlines International* (Toronto: Harbour Publishing, 2003), 15,

was especially primitive at these schools in comparison to the contemporary situation in the United States.

While by 1936 some instrument training was required for airline pilots in Canada, it remained difficult to find instructors with instrument experience.¹⁷ In an indication of the state of instrument flight training in Canada at the time, following repeated failed attempts to place its pilots in RCAF instrument training courses due to a lack of training capacity, Canadian Airlines, which was expanding its long-distance routes at the time, sent its pilots to the United States to gain the required IFR experience.¹⁸ For similar reasons, TCA developed its own internal instrument training procedures in 1937 and 1938, utilizing the experience of pilots who had previously flown for United Airlines in the process.¹⁹ For its first pilot recruitment drive, TCA required men who could rapidly adapt to the new methods of instrument flying. A few initial recruits proved to be too old. As Peter Pigott explains, “not old in years but old in hours of flying who couldn’t master instrument flying. Quite simply, their nerves couldn’t take it, so they went back to the bush.”²⁰

In the lead-up to the Second World War, British military planners predicted that 50,000 Commonwealth aircrew would be required annually to both create and maintain a viable air force for the approaching conflict which some interwar strategists believed would be fought and won in the air.²¹ A great challenge facing British military planners in

¹⁷ Peter Pigott, *Wingwalkers*, 77.

¹⁸ Peter Pigott, *Wingwalkers*, 77.

¹⁹ Peter Pigott, *National Treasure*, 35.

²⁰ Peter Pigott, *Wingwalkers*, 40.

²¹ F.J. Hatch. *Aerodrome of Democracy: Canada and the British Commonwealth Air Training Plan 1939-1945* (Ottawa: Directorate of History, Department of National Defence, 1983), 15. The most notable of these strategists was Giulio Douhet who argued in *The Command of the Air* that the next war (WWII) would be won by the destruction of the enemy's industrial and military capabilities from the air.

1939 was, therefore, where these aircrew would come from and how and where to train them.

At the outbreak of the Second World War Canada was poised in some ways to play a central role in the air war against Germany. A precedent for the employment of Canadian aviators had been set during the First World War in the Royal Flying Corps and Royal Naval Air Service (RNAS).²² Approximately 3,000 aircrew who flew for Britain in the First World War trained in Canada, while a full forty percent of RFC and RNAS aviators on the Western Front were Canadians.²³ All told, at the conclusion of the First World War, approximately 13,000 pilots returned to Canada from combat overseas.²⁴ In no small part because of this precedent the RAF saw Canada as a vital source of aircrew for the next war. Yet just how prepared Canada was to train pilots for the type of flying the new war required was, as a result of its unique interwar aviation heritage, questionable.

In spite of the fact that the BCATP adopted RAF training standards in 1939, and that those standards placed at least some emphasis on instrument flying, the instructors who were destined to teach the new generation of commonwealth pilots in the BCATP came from a unique cultural and professional background which lacked the appropriate flight experience to adequately instruct in instrument procedures.²⁵ Additionally, due to the nature of bush flying and the mystique attached to the image of the First World War Ace at the outset of the Second World War, a degree of risk taking and bravado was

²² The RFC and RNAS joined together in 1918 to form the Royal Air Force (RAF).

²³ Phillip Smith, *It Seems Like Only Yesterday: Air Canada, The First Fifty Years* (Toronto: McLealan & Stewart Ltd. 1986), 12.

²⁴ Allan English, *Cream of the Crop*, 11.

²⁵ DHH, 181.09(D89)(A), Department of National Defence, Unknown Author, "British Commonwealth Air Training Plan - Flight Training" Circa 1950.

encouraged among the first wartime RCAF recruits. As the next chapter will show in greater detail, the enemy that RCAF aviators faced overseas was not only human, but atmospheric and technological as well, enemies that were ruthlessly unforgiving of mistakes that often accompanied risk taking and shows of bravado. It was in large measure the pilots who survived their tours of operations and related their experiences back to new recruits, who were responsible for shifting the focus of flight-training by war's end. This shift promoted the production of highly professional pilots whose attention to detail in the cockpit and elimination of unnecessary risks defined a new era in Canadian aviation.

Chapter Three: The BCATP

The British Commonwealth Air Training Plan had monumental impacts on Canadian aviation both during and after the Second World War. Yet while the BCATP experience effectively brought Canada in line with international trends in flight training by war's end, and indeed made Canada a leader in aviation training, the process by which the plan evolved had lasting repercussions on the Canadian aviation industry, not all of which were positive. Through an analysis of the role of flight instructors in the first years of the plan, the legacy of the first generation of BCATP trained recruits on subsequent training, and accident trends in both the BCATP and at overseas Operational Training Units, the following will explore the legacy of Canadian wartime flight training on professional aviation culture.

To understand the evolution of flight training in the BCATP, and thus the development of postwar professional aviation culture in Canada, it is useful to begin by examining the history of the men who were most influential on the development of the flying skills and attitudes of recruits; the flight instructors. At the commencement of training in 1940, few fully trained RCAF pilots were kept in Canada to act as instructors in the BCATP. Rather, the vast majority of such men were sent to man the fighters that took part in the defense of Britain. The first instructors in the BCATP were, therefore, civilians who flew for eight privately operated, commercially run flying clubs. These were typically ex-bush pilots or veterans of the First World War, all of whom had trained both civilians and military personnel in the skills associated with bush flying demanded by interwar Canadian aviation. Shortly after the outset of the war, fourteen additional clubs

were incorporated in to the plan to serve as Elementary Flight Training School (EFTS) operators, alongside one RCAF run EFTS.¹

The scale of flight training demanded by the war outstripped the capabilities of the civilian run clubs to a significant extent. Prewar RCAF training plans were built around the expectation that approximately fifty pilots were to be trained annually.² While the civilian clubs had a capacity for producing significantly more than this, they fell far short of the capabilities required to produce the thousands of pilots demanded by the war. To make up for the shortfall in instructors, the RCAF allowed clubs to nominate civilian student pilots of their choosing to quickly receive a minimum of 150 hours of flight experience before being placed into Central Flying School for instructor training. Upon completing a four week course in instruction, these students were made sergeants in the RCAF and granted temporary leaves of absence to instruct at the civilian schools.³ This practice lasted until 1941 when the plan began producing enough pilots to internally staff instructor positions.

Commercial airline pilots from CAL and TCA, who had perhaps the most experience of any Canadian aviators in 1939 with the type of flying that the vast majority of BCATP recruits would eventually perform overseas, were largely barred from leaving their civilian employment to join the RCAF or RAF.⁴ What role CAL pilots played in the

¹ W.A.B. Douglas. *The Creation of a National Air Force: The Official History of the Royal Canadian Air Force Volume II* (Toronto: University of Toronto Press, 1986), 223.

² W.A.B. Douglas. *The Creation of a National Air Force*, 201.

³ By enlisting these men, the RCAF prevented them from taking their flight instruction skills elsewhere where pay was more profitable, such as to the United States. W.A.B. Douglas. *The Creation of a National Air Force*, 230.

⁴ By an Order In Council, TCA was determined to be an essential service provider, thereby preventing TCA employees from leaving the company to join the RCAF or RAF without receiving permission from both TCA and the government. LAC, RG70, Vol. 6, File TCA-1-2-8, D.B. Colyer, Vice President TCA, "Letter to Captain R. Allen, Training Superintendent, British Ministry of Aircraft Production," 18 Aug 1941.

training of BCATP recruits was in the staffing of an Air Observer Schools where they acted as "air-chauffeurs" to RCAF instructors and their air observer students.⁵ TCA was involved in training pilots in the trans-Atlantic ferry program with RAF Ferry Command, and also helped Eastern Air Command aircrew convert from twin engine Digbys to four-engine Liberators, but never sent pilots to instruct directly in the BCATP.⁶ While keeping a vital component of the transportation infrastructure of Canada operational was important to the war effort, it does seem rather curious that experienced airline pilots were not employed more extensively as flight instructors. It seems likely, however, that concerns expressed by civil servants administering TCA that losing pilots to the military would mean losing market share to other airlines as a result of a necessary reduction in service, influenced this decision.⁷

In an effort to rapidly produce more pilots to supplement the civilian instructors at the club-run schools, initial plans for instructional time at EFTS were reduced from eight to seven weeks and from sixteen to fourteen at SFTS.⁸ This was, as a Department of National Defence post-war historical report noted, a "temporary and dangerous expedient and was abandoned as soon as possible."⁹ Nevertheless, the lowering of the number of flight hours for the first classes of BCATP recruits had lasting effects on training and on Canadian aviation more broadly.

⁵ Air Observers became known as Navigators later in the war. W.A.B. Douglas. *The Creation of a National Air Force*, 224.

⁶ LAC, RG70, Vol. 6, File TCA-1-2-8, Trans Canada Airlines Internal Memo, "Re: War Effort in the Form of Air to the Royal Air Force Ferry Command."

⁷ A letter from O.T. Larson to President of TCA, H. J. Symington in 1943 indicates that pressure had been exerted on the Canadian government to prevent "a considerable number of pilots moving over into RAF work" which could allow other airlines to move in on TCA routes abandoned because of a lack of pilots. LAC, RG70, Vol. 6, File TCA-1-2-8, O.T. Larson, "Letter to H. J. Symington" 19 Aug 1943.

⁸ W.A.B. Douglas. *The Creation of a National Air Force*, 224.

⁹ DHH, "British Commonwealth Air Training Plan - Flight Training," 3.

Much to their general disappointment, the vast majority of the first BCATP graduates were trained as instructors and sent back into the plan to teach.¹⁰ Many of these pilots spent the formative years of the war training other pilots who themselves would likely be posted to OTUs and operational combat units relatively quickly. The practice of re-circulating graduates back into the scheme meant that the bulk of instructors who remained in the BCATP for the most crucial years of wartime flight training in 1941 and 1942, had proceeded through their own training in abbreviated fashion and had been instructed by pilots whose skills were geared more towards bush flying than the 'modern' aviation of the 1940s.

After being accepted into the RCAF and called-up for service, recruits were sent to Manning Depots located across the country where they received basic drill instruction and a battery of physical and mental tests. Potential pilot candidates were then typically posted to general duty tasks such as guarding airfields at military installations as a means of employing them in a useful capacity until room was made available for them at Initial Training School (ITS).

In 1940 ITS was little more than a holding area for uncategorized aircrew where the drill and indoctrination to military discipline begun at Manning Depot continued. The closest trainees made it to an aircraft was the Link Trainer, a pneumatically controlled instrument flight simulator used to test, and not at this stage train, the motor and reaction skills of potential pilots. In 1940 and 1941, ITS Instructors were assigned general course syllabi to teach, most of which focused on military procedures as well as academic subjects such as mathematics and physics. Few of these instructors,

¹⁰ W.A.B. Douglas. *The Creation of a National Air Force*, 237.

however, received any training on education or teaching methods.¹¹ Additionally, there was little oversight of training or assessment of instructor capabilities in either classroom or Link training from any central agency. As historical commentators of the BCATP have noted, this resulted in a wide range of instructional quality between schools.¹² It was not until August 1941 that aviation theory began to be taught at ITS, and even longer before instructors with educational training were put to the task.¹³ These changes, when they came, extended ITS training from four to ten weeks and represented just one of the myriad of improvements in theory of flight training made in the BCATP throughout the war.

Upon graduation from ITS, candidates selected for pilot training proceeded to Elementary Flight Training Schools. In 1940 these schools were staffed by the aforementioned civilian instructors, many of whom who had received abbreviated service instruction at RCAF Central Flying School. The syllabi used to teach students at EFTS, where they were instructed in the basic principles of flying, included emergency procedures, basic aerobatics, navigation and takeoffs and landings among other fundamental maneuvers. These were taught using a form of instruction known as 'patter' where the instructor memorized a series of verbal commands to give to the student through a primitive intercom system of tubes connected between the mouth and ears of instructor and student.¹⁴ As Major General G.J.J. Edwards, who became an EFTS instructor following his own training within the BCATP in 1941 recalls, instructors

¹¹ DHH, "British Commonwealth Air Training Plan - Flight Training," 17.

¹² Ibid., 17 -18.

¹³ Ibid., 16.

¹⁴ Known as the Gossport Tubes, these intercoms were simply a tube running from the mouth of the instructor to the ears of the student, and were notorious for being difficult to use.

“were to become a human tape recorder.”¹⁵ Many instructors and students reported that this method of communication and instruction “was very poor,”¹⁶ and as such training was often tedious for the instructor who had simply to repeat memorized instructions to new students on a daily basis, and frustrating for students who were unable to easily ask questions in the air. In turn, the quality of training inevitably suffered. The monotony of the experience, both for instructors and students, may be one explanation for a problem that plagued the BCATP for the duration of the war, though one that was particularly troublesome in its early years.

Unauthorized low flying was the most significant cause of accidents and fatalities in the BCATP.¹⁷ Often explained as the result of a pilot’s “skill not matching their daring,”¹⁸ the rash of accidents attributed to low flying was in fact more endemic than the result of a few exuberant students pushing their luck. Such accidents were just as often caused by instructors as by students, particularly in the first years of training. An accident investigation branch report in 1940 noted that more than fifty percent of low flying accidents occurred while trained pilots, that is, instructors, were in command of the aircraft.¹⁹ By late 1941 the problem had only increased in parallel with the expansion of training. Of 170 fatalities that year, 40 were directly attributed to “low aerobatics and low flying.”²⁰

¹⁵ Interview with Air Vice Marshall Gerald J.J. Edwards, Reel 1, Side 2, 13 June 1975, ID 207, UVSC, Canadian Military Oral History Collections, Dr. Reginald H. Roy Collection.

¹⁶ W.A.B. Douglas. *The Creation of a National Air Force: The Official History of the Royal Canadian Air Force Volume II* (Toronto: University of Toronto Press, 1986), 242-3.

¹⁷ DHH, “British Commonwealth Air Training Plan - Flight Training,” 85.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ F. J. Hatch, *Aerodrome of Democracy: Canada and the British Commonwealth Air Training Plan 1939-1945* (Ottawa: Minister of Supply Services Canada, 1983), 148.

Memories of unauthorized low flying are common amongst veterans who trained in the BCATP. Major General Edwards recalls that shortly after takeoff on his first indoctrination flight his pilot quickly diverted from the planned exercises and brought the aircraft to treetop level to conduct an inspection of a herd of cattle. "I found that a little nerve racking"²¹ Edwards remembers. In 1940 pilot trainee Andrew Robert MacKenzie recalled that it was common for trainees to follow the lead of instructors like the one who trained Edwards. While the training plans called for specific maneuvers to be practiced while recruits went up without an instructor MacKenzie recalls that, "ninety nine percent of us went up and did aerobatics instead of practicing the set sequence...down, kicking the tree tops, flying around just like a high speed car."²² Even for students in the next stage of training conducted at Service Flight Training School, where unauthorized low flying by students and instructors was still officially prohibited, the official history of the RCAF notes, "as future fighter pilots they [the students] were also 'almost encouraged' to experiment with the aircraft." There was, "still something of the First World War's adventurism and romanticism in flying, an air of exciting improvisation about the whole experience."²³

Pilot Lewis Duddrige, who trained in the BCATP in 1941, explains the context of risk-taking amongst recruits and disciplinary actions taken, or not taken, by administrators with respect to low flying and other breaches of protocol:

Well certainly there were cases of an aircraft coming back with some bush wrapped around a wheel...I suppose since then I have wondered if they hated to get rid of a chap like that. They hated to be too tough on him because maybe that's what we needed. You know it is a fine line between an ability to know that

²¹ Interview with Air Vice Marshall Gerald J.J. Edwards, Reel 1, Side 1.

²² W.A.B. Douglas. *The Creation of a National Air Force*, 279.

²³ W.A.B. Douglas. *The Creation of a National Air Force*, 280.

you are too bloody low, or simply daring to do it...to know the difference between daredevil and mistake. If you were picked out to fly a Lancaster for a dam-busting raid, I don't know which one they would want. The crew would sure as hell want somebody with a level head, and knew where the wheels of the aircraft were.

In partial indication of the attitude towards breaking regulations held by some instructors, Lewis Duddridge, continuing, recalls the following accident:

When four young men [all BCATP instructors] were killed west of Saskatoon in a Cessna Crane, it was utterly ridiculous. They were overstressing the wing, they were cloth covered...[the pilot in command] put it into a dive and pulled it out, and the wing uncovered and it crashed. Somebody had a stupid idea, they should never, ever have allowed that aircraft to do that. Why somebody else in the crew, the other three, didn't manhandle him is more than I know.²⁴

Recalling his memory of accidents in the BCATP during his own training in 1941,

Major General Edwards recounts:

I forget how many of my classmates killed themselves...Out of the sixty or seventy students, I think we killed, I think there were killed, eight or ten...we didn't hear much about the accidents you know, they backed and filled them in immediately [holes cause by the impact of aircraft]. They didn't want to panic the balance of the course...we buried quite a few. But you knew it was never going to happen to you. You suspected all along that the other fellow, as much as you liked him, was not nearly as skilful as you were and he made a nonsense of it somewhere and killed himself.²⁵

In a similar sentiment indicative of the psychological impact of accidents on recruits, Lewis Duddridge recalls that "I would say there was more flippancy about accidents then...I do not think that too many student pilots were afraid of the airplane as they walked towards it."²⁶

Accident report summaries from a typical month of BCATP operations in September 1942, a period where the first generation of BCATP recruits had already, like

²⁴ Interview with Lewis Duddridge, July 2009, Interview one of two.

²⁵ Interview with Air Vice Marshall Gerald J.J. Edwards., Reel 1, Side 2.

²⁶ Interview with Lewis Duddridge, July 2009, Interview one of two.

Major General Edwards, been re-circulated back into the plan as instructors, tells of the tragic consequences of students and instructors routinely breaking regulations:

...A Sergeant instructor with a student flying a Stearman aircraft engaged in unauthorized low flying. Through an error of judgment the aircraft struck the water of the Bow River and both occupants were killed...

...A Pilot Officer instructor with a student flying a Harvard aircraft was engaged in [prohibited] mock fighting manoeuvres with an Oxford which was flown by an experienced pilot with a crew of two. The Harvard collided with and destroyed the tail of the Oxford, the crew of which were killed, together with the student in the Harvard. The instructor escaped by parachute. This mock air fighting was pre-arranged by the pilots concerned before leaving their home station...

...A Pilot Officer with a student in a Crane aircraft engaged in unauthorized low flying collided with a straw stack and crashed. Both instructor and student were killed...²⁷

In this one, non-exceptional month alone, twelve fatal crashes caused the death of twenty-four personnel. In seven of those twelve, the instructor was implicated in the cause of the accident.²⁸

In 1941 fatal accidents within the BCATP, attributed to all causes including low flying, totaled one per 11,156 hours flown. Total accident rates were, however, much higher than this ratio might suggest. During the summer training season of 1942, the average accident total was 445 per month.²⁹ By the last year of the war, in an indication of improvements made in the system and of the shift in emphasis from producing fighter pilots to bomber and maritime patrol pilots, the number of fatal accidents, at least, was halved.³⁰

²⁷ LAC, RG24, Vol. 3278, File H.Q.235-11-1, "Accident Investigation Branch Monthly Summary of Accidents. September 1942," August 1942.

²⁸ Ibid.

²⁹ Average monthly accident totals for June-September 1942. LAC, RG24, Vol. 3278, File H.Q.235-11-1, "Accident Investigation Branch Monthly Summary of Accidents," June to September 1942.

³⁰ Hatch, *Aerodrome of Democracy*, 148.

Instruction at SFTS, where students graduated to larger aircraft such as single-engine Harvards or Yales, or multi-engine Ansons or Cranes, was the final stage of training in the Canadian BCATP system. Due to the fact that bombing operations in Europe had not developed significantly by 1941, and that there were more single engine than multi-engine aircraft available for training, more students were initially trained to fly fighters rather than bombers or maritime patrol or transport aircraft in the expectation that the war would continue to require pilots like those who manned Spitfires and Hurricanes of the Battle of Britain. With the escalation of allied bombing operations from 1942 onwards, and increased air resources dedicated to the Battle of the Atlantic, however, the vast majority of BCATP recruits went on to fly the large and sophisticated Wellingtons, Halifaxes and Lancasters of Bomber Command, or the Hudsons, Cansos and Liberators of Coastal and RCAF Eastern Air Commands.

The relatively few BCATP pilots who were sent to Europe rather than be re-circulated back into the plan as instructors in 1940 and 1941 encountered a new type of flying in England for which many were simply unprepared. Norman L. Magnusson, an air observer who graduated from the BCATP in 1941, recalls that the time spent at Operational Training Units in Britain,

...was a maturing period for most of the aircrew and pilots who began to realize that war was a pretty serious business. Prior to that time it was a great deal of fun. Learning how to fly, being involved in flying activities was great fun...We lost a number of crews...it seems to me that the memories I have of the operational training unit were the difficult flights that we had, the other was carrying coffins to the cemetery. We spent a great deal of time burying our friends.³¹

³¹ Interview with Air Vice Marshall Norman L. Magnusson, Reel 1, Side I, 13 June 1979, ID 207, UVSC, Canadian Military Oral History Collections, Dr. Reginald H. Roy Collection.

Fatal accidents at overseas OTUs were alarmingly routine. Casualties due to accidents not only at OTUs but in operational combat units were far higher than at BCATP schools in Canada. Indicative of the reasons for this, Major General Edwards recalls the impact of having operationally experienced pilots relate their experiences of OTUs back to him.

By the summer of 1942 we were shaking ourselves down. We were getting people back from the European theatre as instructors. That was interesting because a lot of these chaps came back and I recall the long discussions with some of them, and they were saying you are just not teaching them the right way, you are not teaching them the right thing. There is all kinds of bad weather flying over there, they are not getting it back in Canada...I gather a great many of the graduates that went across wiped themselves out very early in the subsequent conversion training programs in the United Kingdom because of the bad weather conditions... The more experienced people could handle it easily. Most of the less experienced found out in a hurry and survived. But some, perhaps even many, flew into hills, flew into trees. People getting lost all the time. Flying into balloons...dying.³²

Reports from the UK written in 1943 on the quality of pilots that Canadian schools were producing indicated that training in the BCATP was lacking in certain areas. One report representative of prior assessments suggested that the skills of Canadian trained pilots were “low in relation to the flying hours completed.” Navigation was “found to be of a low standard,” and night flying skills were determined to be “not compatible with the hours of night flying recorded in log books.”³³ Such results, while admittedly contentious, seem to correspond with the relative lack of emphasis placed on instrument training given to Canadian students prior to 1943. That reports were issued later in the war vindicating Canadian training is likely in no small part due to the presence of experienced operational pilots returning to the training system as instructors.³⁴

³² Interview with Air Vice Marshall Gerald J.J. Edwards, Reel 1 Side 1.

³³ As Quoted in: W.A.B. Douglas. *The Creation of a National Air Force*, 270.

³⁴ As Quoted in: W.A.B. Douglas. *The Creation of a National Air Force*, 270.

S.F. Wise, the lead historian for the first volume of the official history of the RCAF and himself a BCATP trained pilot, was interviewed for the second volume of that history. As a recruit in 1943 he recalls proceeding through a system very different from that experienced by Edwards and MacKenzie. Beginning even before recruits stepped into the cockpit of an airplane, combat experienced pilots began playing a role in the first stages of BCATP training. At ITS, Wise recalls the experience of having an “all important” fifteen minute interview with combat experienced pilots for the purpose of selecting recruits for pilot training:

You were brought before a board which consisted of officers who themselves had had [operational] tours. It was really the first time we had ever been up against what I would refer to as the “real” air force, the real fighting air force, instead of training...they may not have been that old but, my god, they had old faces. It was an extremely serious business ... I can remember that I sweated.³⁵

Whereas Andrew MacKenzie went through twelve weeks of training in 1940 where adventurism and bravado were tacitly encouraged among young recruits who attempted to fly their Tiger Moths “like the Canadian Red Baron,”³⁶ Wise endured twenty-one weeks of intense, precision oriented flight training in 1943. Included in the extended time was more emphasis on instrument flying through increased night, hood, and Link trainer experience.³⁷ Wise commented that this training encouraged students to fly with precision and

a sense of professionalism. Not military professionalism, really professionalism as a pilot. The sense that you were training for a highly skilled kind of occupation. That’s not a proper thing for a service person to feel, and yet it’s true. I think one of the effects of the BCATP was to create that sort of a sense of professionalism; pride in being a pilot. Their indoctrination reinforced that. The indoctrination had

³⁵ Ibid., 282.

³⁶ Ibid., 280.

³⁷ To simulate IFR conditions in flight, instructors used (and continue to use today) a hood which is placed on the head of the student to prevent them from seeing anything but the instrument panel in front of them.

less to do with the RCAF as a fighting unit than it had to do with the creation of an aircrew spirit in which there was a high level of professionalism.³⁸

As Wise's experience demonstrates, by the end of the war BCATP course structure and syllabi had adapted to the demands of overseas flying considerably. Tour expired pilots were recirculated back into the training system, educating not only students in the process, but plan administrators and policy makers as well. By 1945 ITS training had been extended from four to ten weeks, passing through seven editions of course syllabi along the way.³⁹ EFTS syllabi had progressed through eight different editions, the last one appearing as late as February 1945. All of these placed increasing emphasis on instrument and night training. At SFTS, where the first edition of the syllabus called for as little as five hours of synthetic, instrument-oriented training on the Link, the final syllabus required no less than 48 hours synthetic training, most of it on new versions of the Link, and given by instructors with increased experience and knowledge of what it was they were teaching.⁴⁰ In the air, emphasis was likewise increasingly placed on preparing students for poor weather flying with improved instruction being offered in instrument and navigational procedures. 'Stunting' and unauthorized low flying had not been eliminated, but casualties associated with them had dropped.

As the experiences of MacKenzie, Edwards, Duddridge, Magnussun and Wise demonstrate, the plan evolved as the war progressed. At some level this evolution was administrative and organizational, as there clearly were a number of logistical hurdles to overcome in the initial development of the BCATP. Much of the evolution in flight

³⁸ W.A.B. Douglas. *The Creation of a National Air Force*, 284.

³⁹ DHH, "British Commonwealth Air Training Plan - Flight Training," 21.

⁴⁰ *Ibid.*, 51.

training, however, was the direct result of aviators experiencing a new type of flying for the first time. It was the successes and failures of those aviators that taught the next generation how to handle the new challenges posed by long-distance instrument flight in increasingly complex aircraft. Lewis Duddridge sums-up this evolutionary process:

I think, if you wanted to call flying in Canada in 1939 a vacuum, then the things that happened in 1940 and 1941 were things that were happening if you put an aircraft into service before you had wind-tunnels to test it...Some things had to change because of the trial and error system. And yes, we progressed wonderfully well because some commanding officer would say, 'well that is not going to be done again, we are not going to lose another man [that way]'...That was happening, and because we had keen young minds in our air force, guys who became wing commanders almost overnight...it improved our system and what we were putting out. That's what I really believe.

Just as training adapted as the war progressed, so too did the professional culture shared by wartime aviators. While a sense of community and common identity, a prerequisite for the creation of a cohesive professional culture, was loosely shared between interwar Canadian aviators, those bonds had been tempered by economic competition and geographic dispersion between 1918 and 1939.⁴¹ At the outset of the Second World War the young men learning to fly were not only united in purpose, but also in the cohesion inherent in the military way of life. In the process and through the hierarchical system of the military, unique 'levels' of membership within the group formed where new recruits were on the bottom and tour experienced combat pilots at the top. Indoctrination into this system began at Manning Depots where students were taught the principles of military life. Lewis Duddridge recalls the atmosphere at Manning Depot as being "gung-ho."

They were able to instill in us the feeling that this may be the last chance we got, that we may lose this war. You see we had just lost at Dunkirk when I got into

⁴¹ Robert L. Helmreich and Ashleigh C. Merritt. *Culture at Work in Aviation and Medicine: National, Organizational and Professional Influences* (Burlington, VT: Ashgate, 1998), 30.

Manning Depot, and that feeling had got into the military...it was get your butt in gear and do it...The strange part is, you take a bunch of farm boys and city boys, they accepted it...the feeling was there that lets get at it.⁴²

The novelty of flight, particularly in the early twentieth century, had combined with the dashing image of the First World War Ace and the adventuresome, womanizing bush pilot to lead many young men to choose service with the RCAF over other branches of the Canadian military during the Second World War. Like many fellow recruits at the time, for Major General Edwards, "It just never occurred to me to approach the army or navy...I sort of backed into exclusive interest in the RCAF... I think flying had just rubbed off on me, almost unawares."⁴³ Lewis Duddridge, who's only prior experience with aviation was seeing planes fly over the railroad tracks near his Saskatchewan farm in the 1930s, likewise notes that he was "bug eyed" whenever he saw them and, perhaps as a result of this exposure, explains that he did not "recall any thought except [joining the] air force."⁴⁴

Following their time at Manning Depot, aircrew candidates who successfully passed a series of mental and physical screening tests graduated to Initial Training School followed by Elementary Flight Training School. It was at EFTS that Lewis Duddridge recalls "a new level of excitement and interest and challenge. And you didn't get anywhere for nothing...you had to work your butt off."⁴⁵ As Robert L. Helmreich and Ashleigh C. Merritt note in *Culture at Work in Aviation and Medicine*, "Selectivity and competition are...defining characteristics of professions; far more apply than are accepted. The process of acquiring such expertise usually requires the novice to

⁴² Interview with Lewis Duddridge, July 2009, Interview one of two.

⁴³ Interview with Air Vice Marshall Gerald J.J. Edwards, reel 1 side 1.

⁴⁴ Interview with Lewis Duddridge, July 2009, Interview one of two.

⁴⁵ Interview with Lewis Duddridge, July 2009, Interview one of two.

undergo lengthy, demanding training."⁴⁶ Such was the case for the thousands of young men, many of whom began their RCAF careers queued in lines for hours waiting to enlist. Many who applied were rejected, and of those accepted only a few ever became pilots. As the war progressed the length and increasing complexity of training, combined with the desire of the vast majority of recruits to see combat, created a highly competitive system where the progress recruits made was judged against that of their comrades.⁴⁷ "Everybody wanted to be a pilot" Lewis Duddridge recalls.⁴⁸ This competition, combined with the intense workload of training, tested the ability of young men to adapt to high-stress environments and still be able to complete complex tasks.

There was certainly stress at ITS, SFTS and EFTS...if stress was going to be the thing that caused your demise as far as training was concerned, then so be it, they wanted it to happen...if it was going to screw up your flying ability or writing your exams then so be it.⁴⁹

As Air Vice Marshall Edwards recalls, "we weren't preoccupied with really much that was happening outside our orbit. It was really a closed world."⁵⁰ Washout was, as Edwards recalls, "The great fear...the great shame... Could you hack your first solo in the minimum time?...if you didn't make that you were off into limbo somewhere, probably into another aircrew category."⁵¹ Lewis Duddridge recalls that more than anything else, "the biggest single worry was to know that you were going to clean out your locker...and it was happening, often."⁵²

⁴⁶ Robert L. Helmreich and Ashleigh C. Merritt. *Culture at Work in Aviation and Medicine: National, Organizational and Professional Influences* (Burlington, VT: Ashgate, 1998), 27.

⁴⁷ This is not only evident in competition to join the RCAF, but in the disappointment of many who were re-circulated back into the BCATP as instructors rather than be sent overseas..

⁴⁸ Interview with Lewis Duddridge, July 2009, Interview one of two.

⁴⁹ Ibid.

⁵⁰ Interview with Air Vice Marshall Gerald J.J. Edwards, reel 1 side 2.

⁵¹ Interview with Air Vice Marshall Gerald J.J. Edwards, reel 1 side 1.

⁵² Interview with Lewis Duddridge, July 2009, Interview one of two.

One vignette which demonstrates just how mentally demanding and engrossing the experience was is told by Lewis Duddridge:

The pressure was so intense that one young guy got a letter from his mom, for Christmas...and he walked right into a propeller, a revolving propeller and died on the spot. It was very intense, you wanted to get your wings...He had seen his name on the board and knew that he was going for a test and I guess someone handed him this letter and, uh, a combination of everything, anyhow he died instantly...he was just distracted and walked into a propeller he just couldn't see...I absolutely think stress was a major issue.⁵³

Progression through the various levels of flight training, namely soloing and the passing of various flight and written tests, promoted students not only within the military training system, but also within the cultural hierarchy they inhabited. As in other professional cultures more generally, the norms and values of aviation "are exemplified by its senior members and passed on to recruits."⁵⁴ As such, instructors, "gods" as Edwards referred to them when discussing his first training flights, held a reverential status amongst new trainees.⁵⁵ As the war progressed those with operational experiences became the new oracles for a budding generation of new pilots. The "real" air force was, as Wise described, the returning aviators who were given the power to screen recruits at ITS for pilot training by 1943.⁵⁶ They were the ones who had passed the final and most distinguished rite of passage, and in so doing had earned the respect of those who were still trudging through the early stages of training.

What is perhaps most surprising of the wartime RCAF experience was the discord between the fact that the branch of the Canadian military with the highest

⁵³ Ibid.

⁵⁴ Helmreich and Merritt. *Culture at Work in Aviation and Medicine*, 30.

⁵⁵ "And then god stepped out, your instructor." Interview with Air Vice Marshall Gerald J.J. Edwards, Reel 1, Side 1.

⁵⁶ W.A.B. Douglas. *The Creation of a National Air Force*, 282.

casualty rates, by far, was also that with the greatest success in recruitment and internal competition for combat postings. This was the case even though casualty lists were routinely posted in civilian newspaper, telling of the extraordinary dangers RCAF pilots faced overseas. Why this was the case can perhaps be explained, at least in part, by social psychologist Leon Festinger's interpretations of the theory of cognitive dissonance, a theory which has recently been re-popularized by Carol Tavris and Elliot Aronson.⁵⁷ Cognitive dissonance, as explained in the context of aviation by Helmreich and Merritt, suggests that,

...individuals strive for cognitive consistency and that inconsistencies create a negative psychological state (dissonance) that motivates the individual to take steps for its reduction...Aronson and Mills (1959) demonstrated that individuals who undergo a severe initiation to become members of a group or organization will reduce the dissonance created by finding out that the group is of little value [or in the case of the wartime RCAF, particularly deadly in comparison to other branches of the service] by...perceiving it as worthwhile. The dissonance rationale has been applied to the training regimes of organizations such as the Marine Corps that subject their candidates to severe training in the expectation that those who succeed will not only be well prepared but will also have a high regard for the organization and their personal capabilities as a result of having survived the initiation ordeal... In the same vein, pilots may use love of the job as a justification for the inevitable risks that are associated with flying. The premise of dissonance theory is that humans are rationalizing rather than rational creatures.⁵⁸

Another defining aspect of professional aviation culture which may fit into the cognitive dissonance profile is that a certain degree of pride and confidence is instilled in members of a professional culture simply through membership. While this confidence is often well founded, and perhaps self-fulfilling, it can lead pilots to fly while fatigued or

⁵⁷ Carol Tavris and Elliot Aronson, *Mistakes Were Made (But not by me): Why We Justify foolish Beliefs, Bad Decisions, and Hurtful Acts* (Orlando, FL: Harcourt Books, 2007).

⁵⁸ Helmreich and Merritt. *Culture at Work in Aviation and Medicine*, 32-33.

while otherwise inadequately prepared for the challenges they face. As Helmreich and Merritt observe:

The same pride may make pilots reluctant to admit error, which in turn can keep valuable information about human limitations from the organization. Confidence can turn into arrogance, and machismo can lead to a disregard of others' opinions and a failure to consider alternative courses of action. The negative consequences of perceived invulnerability are readily found. An unrealistic view of normal human limitations may lead pilots to disregard standard operating procedures, to proceed into dangerous situations to complete a flight and/or to fail to utilize other crew members as safeguards against mishap.⁵⁹

Another resilient characteristic of professional Canadian aviation culture is a gender-bias against women which remains prevalent throughout the industry in 2010.⁶⁰ Origins of the male dominance of the profession likely stem back to the First World War when aviation and the military became inexorably intertwined. As discussed in the previous chapter, women, already marginally involved in aviation by 1914, were effectively excluded from the profession by 1918 due in large part to attitudes common throughout Western society regarding the role of women in the armed forces. Evidence of the attitudes of men towards women in the RCAF during the Second World War can be found in surveys of training and operational units, one of which posed the following question to RCAF station chaplains in 1943:

What is, as far as you have been able to ascertain in a discreet way, the attitude of airmen generally and the civilian population with which you come in contact, relative to the employment of women in the service (For instance, would they be for or against their own sister, daughter or girl friend joining the service).⁶¹

⁵⁹ Helmreich and Merritt. *Culture at Work in Aviation and Medicine*, 34.

⁶⁰ As mentioned earlier, Air Canada, for example, employs only 132 women as of March 2010. Air Canada email correspondence with author, 15 March 2010.

⁶¹ LAC, RG24, Vol. 3541, File H.Q.927-23-1, Command Chaplain L.E. Gagnon to Station Chaplains "Morale Survey," 8 April 1943.

While the wording of this question, particularly with respect to the employment of women who were directly related to airmen, likely skewed the results, as no doubt did the moral and ethical standards of the military chaplains tasked with 'discreetly' ascertaining such information, the final report on the survey allows a unique view into the opinions of men regarding women in the wartime RCAF. While emphasis in the responses varied, a common thread running between them was the general disapproval of airmen working directly alongside women. One answer to the above question stated "Airmen generally do not look with favor upon the employment of women in the service...In probably the majority of cases airmen tend to look with suspicion upon the character and morals of girls in the R.C.A.F. and all too frequently do not hesitate to make their opinions known amongst civilians." Another states "in the majority of cases, the airman is opposed to the employment of women in the service, motivated either by resentment or because they feel that it lowers their [women's] moral status. Consequently, they would not hear of their sister, wife or daughter joining the service." The final report on the results of the survey list a number of general conclusions, a prominent one being: "the presence of women in the Service was considered as unwarranted female intrusion into an exclusively masculine field."⁶²

That CAL hired its first female pilot in 1973, and Air Canada its in 1978, demonstrates that Canadian aviation remained, if not exclusively, at least effectively a male preserve for decades after the war. Through a perpetuation of the aforementioned male-dominated bush pilot culture, as well as the hegemony of masculinity amongst Canadian combat personnel during the 1940s, women were barred from membership in

⁶² Ibid.

the professional aviation culture that set the stage for the development of postwar commercial aviation.

Thus the development of new attitudes towards pilot training that took place in Canada during the war were at once influenced by, as well as a formative for, the new professional aviation culture that formed by 1945. The BCATP experience was, as this chapter has intended to show, reflective of this development. Old traditions were maintained and strengthened, new ones established, and attitudes towards safety and professionalism in the cockpit shaped within a particularly unforgiving context where wartime pressures tacitly allowed for a degree of human loss. Yet the experience of Canadian pilots in the BCATP is only half of the story which tells of the development of postwar professional aviation culture. The second occurred primarily over the skies of England, the North Atlantic and continental Europe. It is to that story that this thesis now turns.

Chapter Four: Operational Flying

The majority of TCA/RCAF “repats” had wartime experience in either Bomber, Coastal or RCAF Eastern Air Commands. They had been processed through the same, though evolving, flight training system, learned to adapt to similar aircraft types, and flew against comparable man-made and atmospheric opponents. Yet while the training they experienced in Canada indoctrinated these men into the world of flying, it was combat operations, just as much as training, which formed the professional culture they helped shape and perpetuate

Few RCAF pilots who flew combat operations in the Second World War, according to bomber pilot Lewis Duddridge, “would say that they had been trained to appreciate what was going to happen.”¹ Over 17,000 RCAF personnel perished during the Second World War representing forty percent of Canada’s wartime dead. The majority were lost in Bomber Command including 4,272 from RCAF 6 Group alone.² A statistic perhaps most illustrative of the dangers faced by Canadian airmen during the Second World War was that one in four of all aviators recruited into the RCAF became casualties, the vast majority being fatal.³ Despite the fact that operational tour lengths for bomber crews were designed to allow, as Canadian aviation historian Allan D. English notes, a “fifty-fifty chance of survival,”⁴ losses were often higher and casualty rates at some units climbed to seventy-five percent during particularly deadly phases of

¹ Interview with Lewis Duddridge, July 2009, Interview one of two.

² Dunmore and Carter, *Reap The Whirlwind*, 364.

³ Allan D English, *The Cream of the Crop*, 5.

⁴ *Ibid.*, 15.

the bomber offensive.⁵ Although many of these losses were the direct result of enemy action, a significant number occurred for reasons common to both civil and combat aviation. Navigational errors, mechanical failures, pilot error and extreme weather conditions all factored in to the death of airmen. For bomber crews, due to the nature of night operations where aircraft flew one behind another in often poor weather in what was known as a bomber stream, it was difficult for returning crews to know precisely what happened to a lost aircraft. The same can be said of coastal patrol aircraft which typically operated as single units over open-ocean. The reasons for many operational losses will, therefore, never be known.⁶ It is clear, however, that the enemy was not just flack, night fighters and enemy vessels.

Continuous situational awareness, hyper-vigilance over aircraft systems, close attention to weather conditions and the aircraft's response to those conditions, navigational proficiency and attention to fuel management were just a few of the skills required to better an aircrew's chances of survival. In what was a ruthlessly unforgiving world, simple mistakes often had deadly consequences. Recalling the many dangers that he and fellow aircrew faced when tasked with bombing missions to continental Europe, pilot Norman Magnusson recalls:

Half the time you wondered whether you would ever make it back, not only through enemy action, but because of weather and inadequacies of navigation equipment...Most often in Europe at that time of the year [winter, when the longest and costliest raids were made against German targets] it is pretty cloudy, and the altitudes were such that you couldn't see the ground. You could not pinpoint where you were. So essentially you are relying on your astro navigation. If your calculations were accurate, you managed to get back home. I guess that's

⁵ Ibid., 15.

⁶ Ibid., 99.

why I say I wonder often whether some of the crews that went missing...weren't missing because they simply weren't able to find their way home. They just ran out of fuel somewhere over the North Sea or over clag and that was just it. We had some interesting experiences that way. I remember a little later on [in the war] we were assisted by radar developments. There was a development called Gee...I remember getting a Gee fix and transposing it inaccurately and persisting with that error. We came to where we thought Middleton St. George was and we called up. And there was no such thing as Middleton St. George there. We did hear a friendly voice and we came in to land and we found that we were way up in Scotland...It was one of the most fortunate things that happened to us. We landed in clear weather, where all of our aircraft that did return had to be diverted. They were fogged in at Middleton St. George. And many of them didn't have the fuel to divert. So there were aircraft littered all over Yorkshire that night.⁷

Even simple mistakes could have dire consequences. Norman Magnusson continues:

We crash landed a Halifax on our second trip...we had been shot up quite a bit by a night fighter...I guess we were a little panicky and low on fuel...we selected the undercart down and nothing happened...so I pumped like hell [on the manual lever] and nothing happened...So we came in wheels up...In the mid-section of the aircraft were locks, manual locks which locked the undercart up...the flight engineer was supposed to unlock these goddamn things...and here we wrecked the bloody airplane and nearly killed ourselves.⁸

Doubtless, many other crews experienced similar situations with less fortunate outcomes.

As these and other recollections attest, aviators were forced to rely on their navigational skills and intimate knowledge of their equipment during the very early developmental period of meteorological forecasting and instrument flying techniques. Over-reliance on predicted and reported winds, rather than those observed en-route, could likewise prove deadly not only because it could cause navigational errors which

⁷ Ibid.

⁸ Interview with Air Vice Marshall Norman L. Magnusson, Reel 1, Side I, 13 June 1979, ID 207, UVSC, Canadian Military Oral History Collections, Dr. Reginald H. Roy Collection.

expended valuable fuel supplies or possibly result in an aircraft becoming lost, but also because it could inadvertently place an aircraft over a heavily defended enemy region. Recalling a mission to Germany where this became a factor, Harold McKay relates that after navigating using the winds predicted by forecasters, he found that his aircraft was blown far off course. Realizing that the aircraft was mistakenly heading towards the Kiel Canal and Hamburg, both heavily defended areas where rings of radar stations and flack batteries were notorious for devastating bomber formations, he quickly recalculated the wind speed and direction using ground observations and recommended a course correction to the pilot. Other navigators in his formation attempted similar calculations and had broadcast their findings back to base, which in turn recalculated a mean wind speed and direction and rebroadcast that back to the bomber group. This rebroadcast indicated, however, that the wind was similar to the initial forecast. As Harold McKay recalls, “well my pilot immediately asked if I knew what I was doing.”⁹ Deciding to go with McKay’s wind calculation, the aircraft was able to complete the mission successfully. “The next morning,” McKay recounts,

...we found out that we had lost over 120 aircraft shot down over the Keil Canal and shot down over the Ruhr because they had gone by the winds given, and hadn’t allowed enough drift and were blown south onto these targets instead of being fifty to sixty miles north.¹⁰

In another example of the professional judgment necessary for an experienced crew to escape a potentially deadly situation, Douglas Hudson, a wireless operator with 6 Group, recalls that on one mission his pilot was briefed to follow a specific course and altitude so as to avoid German radar. After entering cloud and icing conditions that had

⁹ Interview with F/O Harold McKay, Reel 1, Side 1, 2 July 1982, ID 097, UVSC, Canadian Military Oral History Collections, Dr. Reginald H. Roy Collection.

¹⁰ Ibid.

not been forecast the aircraft began accumulating ice on its critical surfaces. Realizing the danger this posed, Hudson's pilot climbed into colder and dryer air where icing was minimal, announcing over the intercom "we are going up, to hell with the German Radar."¹¹ Three aircraft that stayed at the briefed altitude went down to the effects of icing that night, killing all twenty-one crew members. "I had a rebel for a pilot anyways"¹² Mr. Hudson recalls, reflecting on how critical the professional judgment of the pilot was for a crew's survival.

For RCAF Eastern Air Command and RAF Coastal Command pilots, the enemy was primarily the natural elements of the North Atlantic. Maritime patrol pilots based on the east coast of Canada faced some of the most extreme flying conditions in the world. As the official history of the RCAF notes, Eastern Air Command Pilots often had to coax "their under-powered, poorly equipped machines to exceed all normal limits of performance, knowing too well that the prevailing westerly winds would often make their return flights the most hazardous part of each mission."¹³ As some pilots noted, "It was a triumph of sorts simply to return safely to base."¹⁴ The loss of a single engine, the rupturing of a fuel or oil line, or countless other possible mechanical failures posed deadly risks for crews flying far from shore over the frigid, violent waters of the North Atlantic. Incorrect estimations of wind speed could result in an aircraft proceeding far off course, stretching the already taxed fuel supply of aircraft attempting to escort convoys as far out into open water as possible. Many aircraft which simply vanished while on

¹¹ Douglas G. Hudson Interview, 7 November 2005, Victoria, B.C.

¹² Ibid.

¹³ W.A.B. Douglas. *The Creation of a National Air Force: The Official History of the Royal Canadian Air Force Volume II* (Toronto: University of Toronto Press, 1986), 465.

¹⁴ Ibid., 480.

patrol, likely succumbed to any number of what might have been, over land and in the proximity of an airport, relatively trivial mechanical problems or human error.

As with bomber operations, navigational skills and the ability of maritime patrol aircrew to adapt to weather conditions experienced in the air, rather than simply as predicted by meteorological officers on the ground, was essential. Pushed by strong tailwinds on outbound legs, many of the relatively slow aircraft of RCAF Eastern Air Command had to face the converse headwind on the return trip. As the official history of the RCAF notes, “a slow Digby or Canso struggling back against the prevailing wind from far out in the Atlantic could easily run out of fuel, particularly if it had to divert to another airfield because of a sudden weather change at the home base.”¹⁵ Among the challenges posed by strong, often unpredictable winds, fog and low cloud could combine with changes in atmospheric pressure to produce an especially dangerous condition for an aircraft already flying at a few hundred feet above sea level in search of enemy vessels. Often unable to know precisely how high the aircraft was off the surface of the water given changing atmospheric pressure, it is likely that some of the aircraft that went missing on patrols simply struck the surface of the water in zero visibility.¹⁶ The skills developed through surviving encounters with unexpected atmospheric conditions proved invaluable not only for subsequent operational flying, but also because as pilots returned to Canada to instruct they were able to pass on their knowledge of real world flying to new recruits. Many of these skills were then carried forward in the professional careers of postwar civil aviation pilots including the repats of

¹⁵ Ibid., 535.

¹⁶ Pressure altimeters require manual adjustments using updated atmospheric pressure observations from ground stations near the area of flight operations.

Trans Canada Airlines. As TCA's flagship route in the immediate postwar period was their Toronto to London England run, RCAF pilots with experience flying the North Atlantic were valued additions to the airline's staff.

Not since the First World War had so many aviators been placed in such psychologically traumatic conditions as those experienced by combat pilots during the Second World War. The lessons learned about the reactions of aircrew to psychological distress between 1939 and 1945 helped shape the modern understanding of aviation medicine and psychology. Likewise, modern transportation policy makers and regulatory enforcers have used the lessons learned from the wartime experience to help establish limits for pilot duty times in an effort to prevent airlines from pressing exhausted aircrew to continue flying. During the war, however, these limits were learned only in retrospect through the analysis of losses following extended periods of operations. In a very real sense, therefore, the Second World War was a laboratory for aviation medicine and psychology unlike any other in history.

As historians have long noted, aviation was a "ridiculously dangerous endeavour" in its early days.¹⁷ Because of the hazards of early flight, which were only multiplied during the First World War, aviators who reflected on their own mortality and survived that conflict likely ended up choosing another profession after 1918.¹⁸ First World War airmen who remained flying as bush pilots in Canada could therefore be generalized as a breed of pilot prone to a certain degree of risk-taking in the air. The culture and image

¹⁷ Helmreich and Merritt. *Culture at Work in Aviation and Medicine*, 36.

¹⁸ Ibid.

of the bush pilot, both as perceived within the profession and by the Canadian public as discussed in chapter two, is further evidence of this.

Believing that 'psychological losses' could be mitigated before training began, RAF and RCAF aircrew selection processes were designed to screen out those predisposed to mental breakdown before they ever stepped into an aircraft.¹⁹ Contrary to the hopes of RCAF officials, however, operational wartime flying taught that no one was immune to the effects of chronic stress associated with sustained operations, and that even the most carefully selected and trained aircrew could fall victim to the limits of human mental and physical endurance.²⁰

As with other many other topics concerning the Second World War, a discussion of the psychological traumas experienced by aircrew is a divisive subject. In *No Prouder Place: Canadians and the Bomber Command Experience 1939-1945*, David L. Bashow echoes the claims of the official history of the RCAF which suggests that the number of stress-related casualties in Bomber Command was "infinitesimal."²¹ This was, Bashow argues, due to aircrews having shown a "vast demonstration of psychological resolve."²² Claiming that "fewer than 1 percent of the participants suffered debilitating combat stress that rendered them unable to carry on operations against the enemy,"²³ Bashow cites the volunteer status of aircrew, a lifelong fascination with flight, the mental and physical standards with which aircrew were selected, pragmatic survival instincts and an intense sense of crew and service loyalty for what he claims was a common

¹⁹ Allan D English, *The Cream of the Crop*, 80.

²⁰ *Ibid.*, 4.

²¹ Greenhouse et al., *The Crucible of War*, 526.

²² David L Bashow, *No Prouder Place: Canadians and the Bomber Command Experience 1939-1945* (St. Catharines Ontario: Vanwell Publishing Limited, 2005), 180.

²³ *Ibid.*

steadfastness against mental breakdown among bomber crews.²⁴ Although Bashow's argument is not short of merit, it is likewise apparent that a significant proportion of casualties occurred due to something other than enemy action.

Although it is impossible to know how many Bomber Command casualties occurred as a result of "misfortunes attributed to psychological cases," historian Allan D. English estimates that between 10,000 and 16,000 Commonwealth airmen fell victim to accidents or incidents related to their inability to function at peak mental capacity during each year of the war.²⁵ The majority of these casualties were not the result of complete mental breakdowns, going "crackers" as some aircrew called the condition, but rather of mental fatigue and stress resulting from frequent flights requiring intense mental focus for extended periods of time. Additionally, the fear associated with the extremely high casualty rates amongst bomber crews only added to the mental exhaustion experienced on a nearly daily basis by many. In any situation where an aircrew's ability to correctly make complicated decisions is reduced, mistakes are made that can turn fatal. Misreading instruments, failing to account for fuel limitations when considering wind direction or speed, miscalculating navigational plots or failing to adapt to weather conditions en-route are just a few of countless mistakes that can be made even by experienced combat veterans when overstressed and fatigued.

While not necessarily a universal experience, for some bomber crews the frequency of operations only multiplied psychological stress. Douglas Hudson recalls:

²⁴ Ibid., 181.

²⁵ Allan D English, *The Cream of the Crop*, 99-100.

The stress level was incredible. I mean, your body just sorta packed up, you couldn't do anything with it. That is when my pilot went to the medical officer and said we just can't do it anymore, and we aren't revolting you know, we just couldn't do it. And some people got nailed for that, called Lack of Moral Fiber [LMF].²⁶

Reflecting on the fatigue caused by flying night after night, Douglas Hudson continues, "you got careless and overtired, beat and stressed out."²⁷ Fatigue was particularly dangerous during the approach and landing stages of a flight. The weather in England, renowned for fog and poor visibility, often added to the troubles of already mentally and physically exhausted aircrew returning from long and arduous trips. Evidence of this is best illustrated by non-combat related casualty figures for raids which targeted Berlin, one of the most distant and heavily defended cities on Bomber Command's target list. The majority of these raids were conducted in the notoriously poor weather of the winter months, the only time of year when darkness could help protect the bombers on their night-long operations to the German capitol. On one missions on 16 December 1942, for example, twenty nine aircraft crashed while attempting to land at English bases shrouded in fog. The number of aircraft lost to the enemy on the same raid was only twenty five.²⁸

Returning from a mission to Chemnitz, Germany, Halifax pilot James Baillie encountered poor weather which had unexpectedly moved in over England. As his Halifax had critically little fuel remaining he had no alternative but to attempt a let down through the cloud layers and risk colliding with the rolling Yorkshire countryside in an attempt to reach his home base. By performing what was at the time a relatively

²⁶ Douglas G. Hudson Interview, 7 November 2005, Victoria, B.C.

²⁷ Ibid.

²⁸ Spencer Dunmore, *Above and Beyond: The Canadian's War in the Air, 1939-45* (Toronto: McLelland & Stewart Inc, 1996), 273.

unproven instrument approach procedure using the rudimentary navigational aid Gee, he and his navigator brought the aircraft out of cloud at only a few hundred feet above ground with the runway in sight.²⁹ It is not surprising that exhausted men, who could often muster little energy at the end of a long mission, fell victim to fatigue under similar circumstances.

The effects of stress on the aviator are today well known. Commercial pilots in 2010 are required to take human factors ground school training in which they learn, among other things, of the effects of stress on their ability to safely operate an aircraft. Transport Canada defines three stresses which impact aircrew; acute, chronic and traumatic. When experienced infrequently, acute stress can heighten a pilot's awareness and allow for quick reaction times and correct critical decision making. When a pilot experiences chronic stress he or she "may not have the attention to notice the onset of problems or the motivation to solve them. In extreme cases, sufferers from chronic stress resign themselves to whatever happens to them, because they have lost the will to control their own lives."³⁰ When combined with traumatic stress, which was experienced by most Bomber Command aircrew at some point in their operational tours, chronic stress can cause post traumatic stress disorder (PTSD).³¹ When aircrew suffering from PTSD were placed into positions which required intense mental focus, it is logical to conclude that some, perhaps many, were unable to overcome the challenges they faced in the air.

²⁹ James Baillie Interview, 10 November 2005, Victoria, B.C.

³⁰ Air Canada Human Factors Project Team, *Human Factors for Aviation: Basic Handbook* (Ottawa: Transport Canada, 2004), 113.

³¹ *Ibid.*, 113.

To reduce the emotional stress of combat operations some airmen employed coping strategies which kept them at a psychological distance from others. Halifax flight engineer Ross Irwin recalls avoiding making friends outside his own crew for fear that the grief experienced at the loss of a close friend would jeopardize his ability to carry out complex tasks, and thus risk the lives of his fellow crew members.³² Similarly, Douglas Hudson recalled that the crew of his aircraft made an effort to build a psychological support network to improve the chances of completing their tour. In a vignette demonstrating the potential consequences of losing one member of a crew, Hudson recalls a mission where he had volunteered to take the position of a sick wireless operator on another aircraft. "When I got on board that aircraft, knowing our crew and the camaraderie we had, and the discipline we had, this crew...there was no way they were gonna make it."³³ While the aircraft was in line for takeoff, the original wireless operator returned to the aircraft to relieve Hudson. On the return from the target the aircraft crashed in England, the only survivor being the rear gunner.³⁴ Appreciating the potential ramifications on his crew's performance at the loss of one of their own, Hudson's pilot informally forbade any member of his crew from volunteering to fill in for others again.

Compounding the stresses experienced in the air, being labeled as lacking in moral fiber, an air force euphemism for cowardice, could inspire as much fear as operations against the enemy.³⁵ Most Medical Officers and unit commanders in the RAF who labeled airmen as lacking in moral fiber had little to no training in psychology, nor

³² Ross Barrett Irwin Interview, 10 November 2005, Victoria, B.C.

³³ Douglas G. Hudson Interview, 7 November 2005, Victoria, B.C.

³⁴ Ibid.

³⁵ Allen D English, *The Cream of the Crop*, 81.

was the psychological profession well educated on the causes and debilitating effects of what is known today as post traumatic stress.³⁶ The result was that some airmen who suffered from severe post traumatic stress disorder were punished for perceived cowardice. While the LMF label was accompanied by demotion and punishments comparable to incarceration, it could also evoke shame and scorn from fellow servicemen. Facing becoming an outcast from the culture an airman once inhabited, the threat of losing the respect of one's peers and admiration of friends could pressure an individual to continue flying when it was clear that his physical and psychological health made him prone to making potentially fatal mistakes.

From a future employment standpoint, it was RAF/RCAF policy in 1941 that LMF labeled pilots were to be stripped of commission, removed from the service, and had steps taken to prevent them from "getting a lucrative job as a pilot in civil life."³⁷ While some of the implications of the LMF label on postwar civil aviation such as this are obvious, others may be less so. As Helmreich and Merritt note, a "safety culture" is more than a group of individuals following a set of guidelines of conduct, but rather it is a group guided in behavior by a "joint belief in the importance of safety, and their shared understanding that every member willingly upholds the group's safety norms and will support other members to that common end."³⁸ Yet because of the threat of being labeled LMF, many aircrew likely pushed the limits of their own psychological and physical endurance, creating a culture where maximum effort was demanded, and in turn expected, from all its participants. When combined with hyper-masculine notions of

³⁶ Ibid., 84.

³⁷ Ibid., 104.

³⁸ Helmreich and Merritt. *Culture at Work in Aviation and Medicine*, 133-134.

bravery and fortitude inherent in military life, the LMF label helped shape a professional culture among airmen which promoted risk-taking over caution with respect to the physical and psychological limits of the human body.

A topic that can be linked to psychosocial distress, and one requiring admittedly more attention that can be afforded here, is the role of alcohol in the lives of airmen. As previously discussed, wartime psychologists had been aware of the symptoms of stress on aviators, and in particular of the coping mechanisms employed by some in the form of alcoholism.³⁹ Uncharacteristic of the experience of many other combat servicemen in the Second World War, Commonwealth aircrew were typically in the position of encountering both the trauma of operational flying and the relative peace of life far from the front on a daily basis. In their off-time, and in a custom not unique to men of their age nor to those who experience the acute psychological stress of combat, aircrew often frequented public houses as both a means of escape and entertainment. Described by one veteran as a “relaxant,” alcohol consumption was ubiquitous amongst most RCAF aircrew, many of whom partook on a daily basis.⁴⁰ Whether it was an attempt to sustain the adrenalin rush experienced on a recently completed mission, relax strained nerves, numb the psychological pain associated with trauma and fatigue, or simply socialize with friends, drinking was particularly prominent in the lives of many RCAF aircrew. While admittedly more research is required to establish the role that alcohol played in the lives of wartime RCAF pilots, anecdotal evidence exists to suggest that cross-cultural differences existed between North American and RAF aircrew. In the

³⁹ Allan D English, *The Cream of the Crop*, 63.

⁴⁰ Douglas G. Hudson Interview, 7 November 2005, Victoria, B.C.

words of Lewis Duddridge, “you didn’t often see a Brit drunk. But a Canadian or an American, there was nothing unique about seeing them drunk.”⁴¹

Although seemingly becoming less the case today, the cultural significance of alcohol in the lives of post-war commercial aviators appears to have been particularly prominent in the decades immediately following the war. It seems likely, therefore, that the persistent cultural associations between pilots and alcohol may be explained, in part, by the wartime experience of military airmen who brought wartime traditions with them to their civilian careers.

While perhaps more peripherally linked to the psychology of wartime flying than PTSD or alcohol consumption, the topic of single pilot operations amongst Bomber Command aircraft, and the long term impact this practice had on postwar commercial flying, is worth noting here. While every member of a crew had a critical role to play in the operation his aircraft, Commonwealth bombers were flown by only one man. This practice was carried forward from the interwar period when both the RCAF and RAF operated on peacetime budgets. The savings resulting from single pilot operations meant that both financial and manpower resources could be more widely distributed across the service. As the war progressed and missions became more demanding and aircraft larger and more complex, thought was given to assigning two pilots per aircraft, the standard used by the United States Army Air Force. Yet due to a shortage of pilots in late 1941 and early 1942, Bomber Command decided to maintain the practice of single pilot operations.⁴² This had resulted from a bottleneck in the aircrew training

⁴¹ Ibid.

⁴² Allan D English, *The Cream of the Crop*, 55.

system which formed at OTUs in late 1941 when instructional time was lengthened in an attempt to reduce operational accidents. With longer training times at bases in the UK, positions in those courses were slower to become available for newly arrived aircrew from Canada. The resulting backup of aircrew awaiting advanced training meant that fewer pilots were available to man the exponentially increasing numbers of bombers then being pressed into action. As such, although flight engineers, navigators and wireless operators took some pressures off a pilot flying the large and complex aircraft of Bomber Command, single pilot operations were maintained for the duration of the war.⁴³ The impact this had on post-war aviation was significant.

Breakdowns in communication were notorious for occurring between junior first officers and senior captains in the immediate post-war aviation industry. Many of these breakdowns were likely due to the perception of the co-pilot as a superfluous and unnecessary addition to the flight deck. The need for a captain to rely on his first officer for help was often seen as an indication of poor piloting skills and a threat to the position of power that the captain traditionally maintained. Indeed the hesitancy on the part of some RCAF pilots to join TCA beginning in 1943 can be attributed to the fact that many believed acting as a co-pilot was a subservient task.⁴⁴

Studies after the war indicate that the majority of communication breakdowns between pilots occurred due to the unwillingness of captains to take advice from first officers, and the hesitancy of first officers to question the authority of their captain.⁴⁵

⁴³ Ibid., 51.

⁴⁴ LAC, RG70, Vol. 458, File F-1575-1, B.A. Rawson, "Letter from Superintendent of Flight Operations to Vice President of TCA (Concerning RCAF Pilot Interviews)," 18 August 1943.

⁴⁵ Air Canada Human Factors Project Team, *Human Factors for Aviation: Advanced Handbook* (Ottawa: Transport Canada, 2004), 67.

Indeed even today this cultural legacy continues to exist in some circles of professional aviation.⁴⁶ The reasons for this perception of the co-pilot are based on traditions that go farther back than the Second World War. In early civil aviation the role of the co-pilot was not necessarily that of another pilot with whom the captain actively co-operated, but rather a back-up to be employed in case the captain became incapacitated. During the First World War, the heroes of the air were the lone fighter aces. During the interwar period, Canadian aviation heroes were the bush pilots who individually overcame the challenge of flying in some of the most remote and inhospitable regions of the world. A common analogy used by historical commentators on the role of co-pilots during these early days of flight is that their function was “analogous to that of a fire extinguisher – something to be employed infrequently under special circumstances.”⁴⁷

This perception was not directly targeted for change by the aviation industry until well into the second half of the Twentieth Century. With the development of industry-wide ‘human factors’ and CRM training in the 1980s, flight training in Canada began to teach pilots to use all the human and technological resources available to them to ensure the safe operation of a flight.⁴⁸ That it took so long for the aviation industry to recognize the importance of stressing inter-crew communication highlights the resilience of the professional culture of the wartime aviator, a culture with historical roots that go back to the first days of manned flight. As Helmreich and Merritt note, “professional

⁴⁶ Helmreich and Merritt. *Culture at Work in Aviation and Medicine*, 41.

⁴⁷ *Ibid.*, 41.

⁴⁸ For a general overview of the evolution of CRM training, please see Robert L. Helmreich and Ashleigh C. Merritt. *Culture at Work in Aviation and Medicine: National, Organizational and Professional Influences* (Burlington, VT: Ashgate, 1998).

cultures have considerable inertia and change requires both strong interventions and time.”⁴⁹

The training of the men who went on to fly commercially after the war occurred not only in the Tiger Moths, Avro Ansons and Harvards of the BCATP, but also in the Cansos, Digbys, Liberators, Wellingtons, Halifaxes and Lancasters of Eastern Air, Coastal and Bomber Commands. While training can prepare a pilot for many of the situations he or she may encounter in the air, it takes the experience of facing those challenges in person, and learning from ones successes and failures in doing so, to make a skilled pilot.

The Second World War was a training ground unlike any other in the history of aviation. Yet with the wealth of experience that thousands of young Canadian pilots acquired during the conflict came long-term repercussions on the profession they helped pioneer. The legacy of the LMF label, PTSD, alcohol consumption and single pilot operations all had negative effects on postwar aviation in Canada. As such, while we pay tribute the airmen who perished in the Second World War, celebrate those who survived, and remember all for the contributions they made to the security of peace in this world, we must also remember that they were helping pioneer a profession that was still in its relative infancy. That not all of the lessons they learned, nor they adaptations they employed, were positive, is the result of the wartime environment in which aviation evolved between 1939 and 1945. Indeed while modern aviators continue to strive for safety in all aspects of flight, they are well reminded by the lesson of the past that it is

⁴⁹ Ibid., 51-52.

not just the technology of the aircraft, but the culture of the aviator, which must be considered along that path.

Conclusion

On 5 July 1970, an Air Canada DC-8 under the control of a veteran Second World War RCAF bomber pilot, crashed in a field north of the Toronto International Airport with the loss of all 109 passengers and crew aboard. Failing to follow the airline's standard operating procedures, both of the aircraft's pilots agreed that on final approach to Toronto the co-pilot would arm the aircraft's lift-inhibiting spoilers on touchdown to avoid their inadvertent deployment in the air.¹ This decision was made after disagreements between the two pilots over when the arming of the device should take place, both being opposed to the established Air Canada procedure of doing so at the commencement of the approach. On approach, the Captain decided that the spoilers should be armed only immediately before touchdown. When the captain was seconds away from landing the aircraft he gave a verbal "ok" to the co-pilot who then inadvertently deployed, rather than simply armed, the spoilers. When the aircraft soon thereafter hit the ground as a result of the sudden decrease in lift, one of the DC-8's four jet engines, and a portion of the underside of one wing, tore off causing a fuel leak and fire. After aborting the landing and attempting a go-around procedure, a series of explosions caused the aircraft to lose control at 3,100 feet and plunge to the ground. The immediate cause of the accident was the co-pilot's mistake, for which he repeatedly

¹ Arming involves disengaging the safety locks on the spoilers to allow for their eventual deployment. Deploying is the actual extension of the spoilers to decrease lift.

verbally apologized as heard on the cockpit voice recorder before the crash.² Yet the series of events which led to the accident included a number of human errors, a failure to follow established protocol, and a breakdown in communication and decision making. The accident triggered a series of protocol and safety reviews which had lasting effects on the commercial aviation industry in Canada. It has served as a case study used routinely in modern flight training and represents just one of the many accidents and incidents which have, through the lessons they have taught the industry, helped make commercial aviation in Canada the safest form of long-distance transportation available. Furthermore, the accident helps highlight the changes that have taken place in Canadian aviation which have targeted the professional culture and attitudes towards safety of Canadian aviators.

In the latter decades of the twentieth century the majority of major accidents in the global commercial aviation industry were attributed to human-error. As in the case of Air Canada Flight 621, these were not necessarily related to a lack of technical skill on the part of a pilot, but rather to a cultural climate which predisposed aircrew to failures of interpersonal communication and critical decision making.³ First Officers failing to question the poor decisions of senior captains, breakdowns and misunderstandings in inter-crew communication, and chronic failures of pilots to rely on all sources of information and advice have resulted in tragic consequence that are well documented in aviation accident reports.

² Aviation Safety Network "Air Canada 621" *Accident Description*, 30 October 2003, <<http://aviation-safety.net/database/record.php?id=19700705-0>> (17 June 2010).

³ The first studies of their kind in the 1970s attributed approximately 70% of all aviation accidents at the time to human error, primarily involving poor decision making on the part of the pilot in command.

A new appreciation for the 'human factor' in aviation accidents emerged in the 1980s in the form of Crew Resource Management training, a concept which has profoundly changed the way pilots and aviation support personnel are educated and monitored by the companies for whom they fly and the regulators who oversee them.⁴ Crew Resource Management can be briefly summarized as the study of, and training for, aviation personnel which focuses on inter-personal dynamics, leadership, communications and decision making, and which stresses clarity of communication and reduction of risk-taking as key factors in promoting aviation safety. For the professional aviation culture of the immediate postwar period, which was defined by the entrenched traditions of a skill-oriented social system and founded in a climate where a degree of risk-taking was tacitly encouraged, the embrace of this new cultural-based approach to safety was slow.

From single pilot operations, where experimentation and improvisation shaped the experiences of a few daring and adventuresome individuals, to a profession where pilots are today being rigorously trained to appreciate the role of inter-crew cooperation, communication and physical and mental limits of the human body, professional aviation has evolved through a multi-generational process of experimentation. In a laboratory like no other, tens of thousands of young men were introduced to aviation during a time of global turmoil between 1939 and 1945. The professional lessons they learned during the Second World War went on to shape the postwar commercial airline industry they helped pioneer. As this thesis has shown, these lessons were at once crucially

⁴ Originally known as *Cockpit* Resource Management for its initial focus on inter-pilot communication, the acronym remained the same after the focus on human factors training was expanded to include all individuals involved in the safe operation of a flight, such as flight attendants and air traffic controllers.

important for the establishment of a relatively safe and efficient aviation industry in Canada as they were a hindrance to the development of a culture in which safety trumped tradition. To understand how this seemingly paradoxical situation arose, one must understand the context of the world in which Canadian wartime aviators operated. To this end, this thesis has tracked not only the transition of pilots from wartime service to a peacetime profession, but also the painful evolution of the training system they encountered and the ruthlessly unforgiving world of operational flying they endured.

Evolving to meet the challenges posed by a new era in aviation, where advancing technologies and military pressures pushed aircraft to fly farther, higher, faster, and through weather conditions more extreme than ever before, both the pilots and the training system that processed them made a series of dramatic adaptations over the course of the war. Yet while the professional culture that emerged by war's end among Canadian aviators was unique in some ways, pilots trained in 1945 could not escape the influences of those trained in 1940, nor could the latter escape those of the interwar generation. The professional culture that developed by 1945 was, therefore, not something wholly new, but rather the product of a process that saw one generation pass on to another the lessons and traditions they had learned and developed. The professional culture that merged into the postwar commercial aviation industry in Canada was, therefore, both a product of the Second World War as much as it was that of interwar civil aviation.

Between 1944 and the mid 1950s, more than 440 RCAF aviators made the transition to Canada's largest airline. Given the extraordinarily rapid expansion of commercial airlines in Canada after 1945, these pilots quickly became senior members

of the company and remained at the top of the airline's seniority lists until the 1980s. A typical pilot who joined TCA through the agreement made between the airline and the RCAF in 1944 was twenty years old, in peak physical condition and had between 1,500 and 2,000 hours of flying time. Most had experience operating either bombers or maritime patrol aircraft during the war, and only those who had demonstrated superior skills as pilots were considered for transfer. The choice of veterans from Bomber Command was due to the experience those pilots developed flying large and complex aircraft over long distances and in some of the most challenging flying conditions ever faced by aviators. Their experience on multi-engine military aircraft, and particularly on those which used the Rolls Royce Merlin engines, proved invaluable for TCA both because airline operations shared many of the same traits as long distance bombing sorties, as well as because the airline's immediate postwar expansion included the purchase of a fleet of DC-4M Northstars powered by the venerable and notorious Merlin. Similarly, pilots who flew maritime patrol operations had learned skills which proved invaluable for the development of trans-Atlantic passenger carrying operations which TCA developed after 1945 as a continuation of the wartime Canadian Government Trans-Atlantic Service.

In tracing the wartime experiences of aviators who went on to fly commercially after the war, the professional world that they entered in the early 1940s was the product of interwar civil aviation and bush-pilot culture. Due to modest CAF/RCAF budgets, a fluctuating world economy and the extraordinary costs associated with developing aviation infrastructure in such a sparsely populated and vast country as Canada, both civil and military aviation were slow to develop during most of the interwar

period. What did materialize was an industry that catered to the needs of northern and remote communities, miners, surveyors and mail and freight services. Inter-city passenger flights were, in proportion to population density, miniscule in comparison with operations in the bush.

Due to the nature of bush-flying and of the background of many of the aviators who pioneered the profession, a certain degree of risk-taking was expected and required of pilots to ensure the survival of the companies they worked for. Both the flying skills and the cultural practices that these men developed, such as the reliance on visual flight at low altitudes in rugged, simple aircraft, and the male-exclusivity of the industry, went on to shape the professional culture of the first generation of Second World War aviators.

The first flight instructors in the BCATP were civilians who flew for privately operated flying clubs, many of whom had developed their flying expertise in the bush. With skills geared more towards visual than the instrument flight, these men were poorly positioned to instruct recruits in the type of flying that the vast majority of them would experience after training. With many BCATP graduates lacking the skills and experience required to operate highly complex aircraft often at night and in blackout conditions in the notoriously poor weather of wartime Britain, Continental Europe and the North Atlantic, many of the first BCATP trained pilots sent to operational units became casualties of their own inexperience. Those who were re-circulated back into the BCATP as instructors helped perpetuate the skill-levels and traditions held by their former instructors.

The rash of accidents attributed to stunting and unauthorized low flying in the early years of the BCATP was, at least in part, the result of both instructors and students attempting to mimic the mythical deeds of popular aviation heroes of the First World War and the Canadian bush. As the war progressed, and as casualty rates at both training and operational units rose, combat experienced pilots began relating their knowledge of wartime flying back to BCATP administrators and instructors and in so doing began changing the training system. Through this process of adaptation, Canadian flight schools were producing highly skilled pilots by war's end who were better prepared for the world of instrument flying that awaited them in the postwar aviation industry. Paralleling this development, a professional culture emerged which increasingly stressed precision in flying and the elimination of many unnecessary risks.

Yet due to the development of a social structure where combat experienced pilots were at the top and new trainees at the bottom of a stratified hierarchy, an industry-wide reverence for experience created a culture in which the number of hours a pilot flew with an operational unit dictated his social status. Through this process, traditions developed in which shared rites of passage earned an individual membership into an exclusive community. This group retained and strengthened existing prewar cultural practices as much as it developed new ones. One such practice that remains prevalent throughout the modern aviation industry today is the male dominance of the profession. In a world where women have made significant inroads into many traditionally male careers, that so few women pilots fly for Canada's major airlines in 2010 demonstrates the resilient nature of this seemingly self-perpetuating tradition. Similarly, the strengthening of cultural perceptions of the role of the co-pilot as an

ancillary member of the crew, and the captain as the infallible pilot in command, likewise posed problems for the development of postwar human factors training which stressed safety over preserving pre-existing inter-crew power dynamics.

Training was, however, just one aspect of flying which shaped the culture of Canadian wartime aviators. Flying operational missions in the skies of Europe and the North Atlantic was just as much a learning experience as the training that took place in Canada. As William Carter and Spencer Dunmore explain, in this hostile and ruthlessly unforgiving environment, “a relentless form of Darwinism was constantly at work, weeding out the lazy and the ill disciplined. To survive a tour a crew needed all the skills and teamwork that a group of young men in their early twenties – sometimes late teens – could muster.”⁵

In a world where strict adherence to established procedure could threaten the survival of a crew operating in rapidly changing environments, the ability to quickly adapt and improvise proved to be a hallmark of the combat experienced pilot. Just as the high skill levels of RCAF pilots had lasting benefits for the postwar civil aviation industry, other aspects of their wartime experience were less positive. Pushing the human body and mind past the limits of normal endurance, the physical and psychological pressures of wartime flying were the likely cause of tens of thousands of fatal accidents amongst Commonwealth aircrew throughout the war. The ‘lack of moral fiber’ label applied to airmen who refused to fly was often given to men suffering from what we today recognize as post-traumatic stress disorder. The impact the LMF label had on the ability of a wartime aviator to find employment in the postwar world, as well

⁵ Dunmore and Carter, *Reap The Whirlwind*, 60.

as its role in normalizing unsafe self perceptions of physical and mental endurance, had, and continue to have, lasting impacts on modern commercial aviation. As CRM training attempts to overcome deeply entrenched cultural beliefs and traditions which remain attached to perceptions of the daring and adventuresome hero of years gone by, aviation professionals continue to learn lessons from the past in an attempt to prevent accidents in the future.

The historiography of Canadian civil aviation remains in its relative infancy and this thesis represents only a modest first step in understanding the development of a profession which has had such a dramatic impact on modern society. There remains, therefore, a wealth of research to be conducted to understand the evolution of civil aviation and, likewise, the role of the military in its development. Given the constraints of this thesis, some topics only peripherally discussed here merit additional attention. The role of alcohol in the lives of airmen, for example, is clearly a cultural issue worth investigating further. As anecdotal evidence exists to suggest that a considerable number of postwar commercial pilots struggled with alcoholism, and that social drinking played, and arguably continues to play, a significant role in the interactions of postwar aviators in their off-duty time, suggests that a detailed examination of the cultural aspect of alcohol and aviators could yield interesting results. Similarly, while this thesis has looked primarily at the wartime experiences of postwar aviators, it is clear that more research remains to be done on their experiences flying in peacetime. Issues of pilot duty times, safety regulation, and the efforts of commercial airlines to address cultural issues associated with wartime aviators and their piloting proficiency, are all topics worthy of further consideration. As contemporary concerns associate with the safety of

the aviation industry continue to spark debate amongst professional aviators and the travelling public, it is clear that not only is such further research warranted, it may very well be needed for aviators and the policy makers to better grapple with the history of Canadian aviation.

It is clear, therefore, that mankind's current mastery of the skies is not owed exclusively to the engineers who designed the machines of flight. In addition to the engines and airfoils which were gradually adapted to push the limits of aircraft performance, the profession of the aviator likewise evolved to make airline travel the safest and most reliable method of long distance transportation available. Yet just as in the natural world, not all traits an organism, or in this case a culture, develops, are necessarily adaptive. A few are counter-adaptive in an evolutionary sense, and in the case of professional aviation some proved to be deadly. That professional aviation continues to struggle with issues of pilot duty-times, deregulation and the general safety of aircraft and the travelling public, is evidence that this evolutionary process is ongoing. That aviators and policy makers continue to seek new methods of increasing the safety of their profession demonstrates that as we continue in our efforts to understand how to better operate in an environment in which we never physically evolved to survive, we have learned, and will continue to learn, from history.

Bibliography

Primary Sources: Unpublished

Directorate of History and Heritage, Department of National Defence

File 181.009 (D72), A.L. Morfee "RCAF Pilots for Trans-Canada Airlines," 27 Dec 1943.

File 181.09(D89)(A), Department of National Defence (Unknown Author), "British Commonwealth Air Training Plan - Flight Training" (Historical Narrative) Circa 1950.

Library and Archives Canada

RG 70, Trans Canada Airlines/Air Canada Collection

RG 24, Records of the Department of National Defence.

Primary Sources: Published

Trans Canada Airlines Annual Reports: 1939-1956.

Interviews

Baillie, James. Interview with author, 10 November 2005, Victoria, B.C.

Gerald J.J. Edwards, Oral History interview, Reel 1, Side 2, 13 June 1975, ID 207, UVSC, Canadian Military Oral History Collections, Dr. Reginald H. Roy Collection.

Hudson, Douglas G. Interview with author, 7 November 2005, Victoria, B.C.

Lewis Duddridge, Interview with author, July 2009.

Magnusson, Norman L., Oral History interview, Reel 1, Side I, 13 June 1979, ID 207, UVSC, Canadian Military Oral History Collections, Dr. Reginald H. Roy Collection.

McKay, Harold. Oral History Interview, 2 July 1982, ID 097, UVSC, Canadian Military Oral History Collections, Dr. Reginald H. Roy Collection.

Secondary Sources

Air Canada Human Factors Project Team. *Human Factors for Aviation: Advanced Handbook*. Ottawa: Transport Canada, 2004.

- Air Canada Human Factors Project Team, *Human Factors for Aviation: Basic Handbook*. Ottawa: Transport Canada, 2004.
- Barris, Ted. *Behind the Glory: Training Heroes in Canadian Skies*. Toronto: Macmillan Canada, 1992.
- Bashow, Davil L. *No Prouder Place: Canadians and the Bomber Command Experience 1939-1945*, St. Catherines Ontario: Vanwell Publishing Limited, 2005.
- Bennett, Gus, "Trans Canada Air Lines Wartime Pilots," Airline Pilots of Canada CD, 1st Edition, Toronto Ontario: Retired Airline Pilots of Canada, 2006.
- Carter, William and Dunmore, Spencer. *Reap the Whirlwind: The Untold Story of 6 Group, Canada's Bomber Force of World War Two*. Toronto: McClelland & Stewart Inc., 1991.
- Clancy, Peter, *Micro-Politics & Canadian Business: Paper, Steel, and the Airlines*, Toronto: Broadview Press, 2004.
- Corbett, David. *Politics and the Airlines*. Toronto: University of Toronto Press, 1965.
- Department of National Defence (Unknown Author), "British Commonwealth Air Training Plan - Flight Training" (Historical Narrative) Circa 1950, 181.09(D89)(A), DHH.
- Douglas, W.A.B. *The Creation of a National Air Force: The Official History of the Royal Canadian Air Force Volume II*. Toronto: University of Toronto Press, 1986.
- Dunmore, Spencer. *Above and Beyond: The Canadian's War in the Air, 1939-45*, Toronto: McLelland & Stewart Inc, 1996.
- English, Allan D. "Canadian Psychologists and the Aerodrome of Democracy," *Canadian Psychology/Psychologie Canadienne*, Vol 33(4), Oct 1992, pp. 663-674.
- English, Allan D. *The Cream of the Crop: Canadian Aircrew, 1939 – 1945*. Montreal: McGill University Press, 1996.
- Greenhouse, Brereton et al. *The Crucible of War 1939-1945: The Official History of the Royal Canadian Air Force Volume III*. Toronto: University of Toronto Press, 1994.
- Harvey, J. Douglas. *Boys, Bombs and Brussels Sprouts*. Toronto: McClelland and Stewart Limited, 1981.
- Harvey, J. Douglas. *Laughter-Silvered Wings: Remembering the Air Force II*. Toronto: McClelland and Stewart Limited, 1984.

- Harvey, J. Douglas. *The Tumbling Mirth: Remembering the Air Force*. Toronto: McClelland and Stewart Limited, 1983.
- Hasting, Max. *Bomber Command*. New York: Dial Press, 1979.
- Hatch, F. J. *Aerodrome of Democracy: Canada and the British Commonwealth Air Training Plan 1939-1945*. Ottawa: Minister of Supply Services Canada, 1983.
- Helmreich, Robert L. and Merritt, Ashleigh C. *Culture at Work in Aviation and Medicine: National, Organizational and Professional Influences*, Burlington, VT: Ashgate, 1998.
- Longmate, Norman. *The Bombers*. London: Hutchinson, 1983.
- Martin, Jean. "The Great Canadian Air Battle: The British Commonwealth Air Training Plan and RCAF Fatalities During the Second World War," *Canadian Military Journal*, Spring (2002), pp. 65-69.
- Milberry, Larry, *The Canadair North Star*, Toronto: CANAV Books, 1982.
- Mills, Albert J., Mills, Jean Helms. "Masculinity and the Making of Trans-Canada Air Lines, 1937-1940: A Feminist Poststructuralist Account," *Canadian Journal of Administrative Sciences*, 23(1), 2006, pp. 34-44.
- Mills, Albert J., *Sex, Strategy and the Stratosphere*, New York: Palgrave Macmillan, 2006.
- Pennington, Reina. "Do Not Speak of the Services You Rendered': Women Veterans of Aviation in the Soviet Union," in *A Soldier and a Woman: Sexual Integration in the Military*, eds. Gerard J DeGroot and Corinna Peniston-Bird. Harlow, Essex, England: Pearson Education Limited, 2000.
- Peden, Murray. *A Thousand Shall Fall*. Stittsville, Ont.: Canada's Wings, 1979.
- Retired Airline Pilots of Canada (various authors), *Airline Pilots of Canada CD*, 1st Edition, (Toronto: Retired Airline Pilots of Canada, 2006).
- Robertson, Linda., *The Dream of Civilized Warfare: World War One Flying Aces and the American Imagination*, Minneapolis: University of Minnesota Press, 2003.
- Stevenson, Garth. *The Politics of Canada's Airlines from Diefenbaker to Mulroney*. Toronto: University of Toronto Press, 1987.
- Tavris, Carol and Aronson, Elliot., *Mistakes Were Made (But not by me): Why We Justify foolish Beliefs, Bad Decisions, and Hurtful Acts*, Orlando, FL: Harcourt Books, 2007.

Terrain, John *The Right of the Line*. London: Hodder and Stoughton, 1985.

Thomas, Robyn and Mills, Albert J. and Jean Helms, *Identity Politics at Work: Resisting Gender, Gendering Resistance*, New York: Routledge, 2004.

Thompson, Walter. *Lancaster to Berlin*. Toronto: Totem Books, 1987.

Trans Canada Airlines, *Between Ourselves*, Montreal: Trans Canada Airlines, May 1945.

Trans Canada Airlines, "Pilot Training Program," *Between Ourselves*, Montreal: Trans Canada Airlines, Midsummer Issue 1945.

Vernier, Anthony. *The Bomber Offensive*, Second Edition. London: Pan Books, 1974.

Wise, S.F. *Canadian Airmen and the First World War: The Official History of the Royal Canadian Air Force Volume I*. Toronto: University of Toronto Press, 1980.

Websites

Aviation Safety Network "Air Canada 621" *Accident Description*, 30 October 2003, <http://aviation-safety.net/database/record.php?id=19700705-0> (17 June 2010).

VITA

Surname: Chapman

Given Names: Matthew Albert

Place of Birth: Calgary, Alberta, Canada

Educational Institutions Attended

Selkirk College, Castlegar BC.

2000 to 2002

University of Victoria

2003 to 2007 and 2008 to 2010

Degrees Awarded

Diploma in Professional Aviation

Selkirk College

2002

B.A. History (With Distinction)

University of Victoria

2007